Adlun in the Stone Age

The excavations of D. A. E. Garrod in the Lebanon, 1958–1963

edited by

Derek A. Roe

with contributions by

[illegible]

Part ii

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The excavations of D. A. Garrod in the Lebanon, 1958-1963

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Derik A. Roe

with contributions by
L. Copeland, I. Cornwell, A Garrard, D. Kirkbride, D. Roe, S. De Saint-Mathurin, J. Skiller and M. Sweeting

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SECTION III
THE LEVALLOISO-MOUSTERIAN OF BEZEZ CAVE, LEVEL B

INTRODUCTION

This section is concerned with the Levalloiso-Mousterian deposits in Bezez Cave, which occur in two forms:

1) as Level B, a thin band of archaeological deposit which occupies a similar position, relative to the other industries in the cave, in all exposures: overlying the Acheuleo-Yabrudian of Level C and underlying either Upper Palaeolithic or post-Palaeolithic deposits.

2) as hanging breccias on the wall of the cave. These are found from a height of c. 15.50m. (i.e. at the top of Level B where it is in situ) to a height of c. 17m. above sea-level. They are judged to be vestiges of now-lost Levalloiso-Mousterian layers which once overlay the surviving deposits of Level B. Inventories of the archaeological material from them appear in Appendix C, below (pp.325-7).

As already described in Chapter 3 above, Level B deposits were exposed in each trench at Bezez. When in situ, they lie at c. 15.50m. above sea-level. In the central part of the cave they subside, as do those of Level C, to an unknown depth into the swallowhole (Plates 7, 8). On average, Level B is c. 30cm. thick, with a range of 10 - 70cm. in Trench G layers and a thickness of c. 20cm. in Trenches D and M.

The horizontal distribution of the material differed considerably from that of Level C; only a poor layer, D254 (14 artifacts), was found in the mouth area, separated from the Acheuleo-Yabrudian by a sterile layer. A similar sterile layer separated the two industries in Trench G, where Levalloiso-Mousterian artifacts were fairly abundant (444 artifacts). No material in situ was recovered from Trench K (9 artifacts of Mousterian aspect) or from Trench S (290 similar artifacts). In trench M, the deposits were rich; excluding those layers which had been truncated by recent constructions such as the lime-kiln, or had been disturbed during the earlier excavation of Division I, Trench M contained various layers which related to each other, some horizontally, others vertically. In the centre of Trench M, the lowest Levalloiso-Mousterian layer is in direct contact with the Acheuleo-Yabrudian layer M152. However, it can easily be distinguished from the latter by a striking difference in soil-colour. At the rear, artifacts were abundant; although the layers in 'Victoria Cave', a cavity at the extreme end of the cave, were found to be generally disturbed, a sounding (V200) at the entrance of the cavity yielded 335 artifacts in place. This sounding is not only incomplete (the upper portion was truncated before the start of the excavation) but is also unconnected by trenches to the other exposures. No Yabrudian was reported at the base.

As to the layers which overlie Level B, the presence of the breccias at a higher level indicates that the Division I overburden, which was present before excavation, was unconformably deposited; this fact is no doubt connected with the formation of

1 Stratified Layers in Level B	Present total	Division of present total	
		Cambridge collection	Beirut collection
D254	14	3	11
G44 and D/G44	444	221	223
M156	49	2	47
M155	79	64	15
M151	192	101	91
M150	281	136	145
M147	83	83	-
V200	335	155	180
M top	6	6	-
Total, 'in situ'	1483	771	712
2 Unstratified			
M148, 149	260	-	260
Mixed layers in V, S and K	389	13	376
Victoria Cave (V197-9, V201-8)	3626	-	3626
Breccia block Bbg	50	50	-
Breccia block Bbm	1	1	-
Grand total	5809	835	4974

Table B.1: Inventory and present whereabouts of Level B flint artifacts.

the swallowholes. Over most of its area, Level B is in fact overlain by Neolithic material which itself was covered by Recent deposits; as the latter accumulated, they engulfed the wall-breccias. An exception is found at the East end of Trench M, where the Levalloiso-Mousterian 'outcrops' at the present surface, having (like V200) been truncated during the removal of Division I by the Department of Antiquities. Another exception is the appearance of Upper Palaeolithic material overlying the Mousterian in two small exposures in Trench G. In sum, the surviving deposits (the present Level B) are the base of a once-thicker series of Middle Palaeolithic occupations, the lost parts represented now only by the breccias.

TERMINOLOGY AND METHOD

The Level B material was sorted and studied by the excavators in Beirut in 1964, assisted by S. de Saint-Mathurin. It was then divided as shown in Table B.1; the division was based on the result of the initial study, which concluded that the assemblage could be regarded as belonging to one Levalloiso-Mousterian facies. Two entire units were allotted to the excavators and one unit to the host country. The other units were divided roughly in half between the two parties. The excavators' portion is now part of the Cambridge collection, with the exception of one unit which is kept at the London University Institute of Archaeology.

A large group of artifacts was not made part of the divided material; this came from disturbed deposits and other loci, and all of it has been left in Beirut. Most of this mixed material, consisting of more than 3,500 Levalloiso-Mousterian pieces, came from the rear cavity, Cave V. They are not included in the present study of Level B artifacts, but the Field Register gives a complete list and some pieces have been drawn (see Plate B.14). Table B.1 gives the layers, with which the flints were marked.

We use the term 'Levalloiso-Mousterian' in the sense of D. Garrod, to denote the Mousterian of the Levant, or Levantine Mousterian, which invariably has Levallois débitage; this covers the various facies, such as the 'elongated triangular point facies' of Tabun D, the 'broad oval flake facies' of Tabun C, and the 'broad triangular point facies' of Tabun B (Copeland, 1975).*

The artifacts were studied in the same manner as those of Level C; the tool-classes are those of the Hours typelist, again used more as an inventory than as a list of 'types' (Table B.3), and the technological breakdown of the same material (Table B.2) is also according to Hours' system.

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* The fact that these three facies occurred in stratigraphic sequence at Tabun led the present writer to refer to them as 'Phase 1, Phase 2, and Phase 3 Levalloiso-Mousterian' respectively (Copeland, 1975). As it now appears, these terms are appropriate only at Tabun since the Phase 1 and Phase 2 facies seem to be contemporary elsewhere in the region (Copeland, 1981a; Bar Yosef and Vandermeersch, 1981, p.284).

Categories	Layers in Level B: M147	M150	M151	M155	M156	V200	G44	D254	Class Totals	Totals
A. Nuclei										
1. Cores										
Classic Levallois, multiconvergent preparation; for flakes and blades		3	1			3	3		10	
for points		1					1		2	
Summary Levallois, one-axis unipolar preparation; for flakes and blades		4	1		1	7	4		17	
for points	2	10	1	2		8	5		28	
Summary Levallois, one-axis bipolar preparation; for flakes and blades	1	3	1	2	2	4	2		15	
for points	1			2					3	
Double (back-to-back)		2	1	1		3	2		9	
Mousterian, discoid		1	2	1	2		2		8	
Mousterian, exhausted discs	2	5	3	1	4	10	10		35	
Prismatic, unipolar	1	6	2	1		2	1		13	
Prismatic, bipolar		2				1			3	
Amorphous and divers		3	2	1		3	1		10	153
2. Heavy-duty tools on nodules	2		5	5	4	4	7	1	28	28
B. Products										
Levallois flakes	31	78	50	22	6	103	148	1	439	
Levallois points	10	52	34	13	4	44	65		222	
Levallois blades	8	26	33	10	11	47	73		208	
Non-Levallois flakes and points	19	63	34	8	12	46	66	8	256	
Non-Levallois blades	4	19	18	3	3	46	51		144	
C. By-Products										
Pseudo-Levallois points		1					1		2	
Crested guide-flakes	1	2		1		3			7	
D. Débris	1		4	6		1	2	4	18	1296
Technical totals, by layer	83	281	192	70	49	335	444	14	1477	1477

Table B.2: Technical analysis of eight layers in Level B.

The analyses confirmed that, although certain differences occur among the units or layers, they are insufficient to allow the diagnosis of different facies (Tables B.2 and 3, Figs.B.4 and 7). Accordingly, G44 and its generally horizontal continuation into the baulk D/G44 have been amalgamated as 'G44'; a list of D/G44 pieces is given in Appendix D. Since slight changes in sediments were observed in Trench M, the M layers have not been amalgamated.

All of the Level B artifacts have been amalgamated for the purpose of describing the tool-classes, since not only the stylistic attributes but the technical and typological traits were found to be similar throughout.

The Beirut collection was studied by the writer, but in the time available not all the measurements could be completed, so that certain attributes, such as absolute measurements and primary material are recorded for the Cambridge collection of 835 pieces only (counts include the unit still in London). However, since the two collections were intended to form virtual duplicates, we feel that the Cambridge sample can certainly be taken as representative of that from Beirut.

THE LEVALLOISO-MOUSTERIAN ARTIFACTS

RAW MATERIAL

The material predominantly used by the Level B knappers was a beige, matt or slightly glossy, flint; another source, which yielded skewbald (brown and white) flint, was occasionally used. Some two dozen of the heavy pieces were made on honey-coloured Eocene Nummulitic flint.

About 258 artifacts (38%) in the Cambridge collection are patinated white, of which 64 are all or partly desilicified and are decomposing at the edges. There is some variation in the amount of patination versus desilicification among the layers, the upper part of M having the most desilicifed pieces and G and V200 having the least.

CONDITION

The condition of the artifacts is good; the edges are mainly fresh and sharp and only six pieces have abraded edges. Of the pointed pieces, only a few are without the tip. There is a notably small number of burned artifacts: only eight pieces have thermal fractures and similarly few are calcined to grey or black. A comparable lack of burnt material was reported from Tabun D by Garrod and Bate (1937, p.65). A hard brown concretion adheres to many pieces, which is removable only with acid.

THE CORES

Similar types and proportions of cores are found in each layer which had a good sample (Table B.2; Fig.B.1), the most variety occurring in the richest layers. The original nodules seem to have come from the vicinity of the cave or even inside it, and, so far as can now be judged, consisted of beach pebbles. The primary

Typological analysis of Level B	M147	M150	M151	M155	M156	V200	G44 & D/G44	D254	Class Totals	Totals
Pebble Tools										
1. Chopper										
2. Chopping-tool			1	4	1	1	2		9	9
Bifaces										
7. Amygdaloid					1				1	
15. Partial							2		2	
17. Divers	1				1			1	3	
18. Fragments	1		1				1		3	9
Other Heavy-Duty Tools										
2. Polyhedron, type b			1			2			3	
3. Disc				1	1				2	
4. Rabot							1		1	6
Levallois Tools										
1. Typical Levallois flake	18	55	38	15	6	57	117	2	308	
2. Atypical Levallois flake	8	20	8	4		18	10		68	
3. Levallois point	4	24	21	6	4	7	44		110	
4. Elongated Levallois point		9	2	3		3	7		24	
5. Levallois blade	6	25	26	6	10	26	62		161	
6. Retouched Levallois point	4		2	1		3	5		15	
7. Retouched elongated Levallois point	1	2	3	1		2	4		13	699
Mousterian Tools										
1. Mousterian point	1	1				5			7	
2. Elongated Mousterian point		1				1			2	
4. Pseudo-Levallois point		1					2		3	12
Racloirs										
1. Single straight		2		1		4	8	1	16	
2. Single convex	1	4	7	1		9	8	2	32	
3. Single concave			3	1		3	4		11	
4. Double straight					1	1			2	
5. Double convex straight				1		4			5	
6. Double concave straight		1					1		2	
7. Biconvex	1	1	2			4	1		9	
8. Biconcave		1				1	2		4	
9. Double concave convex		2	1			3			6	
10. Convergent straight and straight/convex	2	1				2	2		7	
11. Convergent biconvex and convex/concave			1		1	2	1	2	7	
13. Offset			1				3		4	
15. Transverse straight						1			1	
16. Transverse convex						1			1	
17. Transverse concave							1		1	
18. Inversely retouched			1			2	4	1	8	
19. Abruptly retouched		1					1		2	
20. With thinned back										
21. Bifacially retouched		1		1		1	1		4	
23. Alternately retouched			1	1		1	1		4	
24. Undetermined fragment										126
End-scrapers										
1. Typical end-scraper						4	1		5	
2. Atypical end-scraper			1	1	1	3		1	7	
3. End-scraper composite							5		5	17
Burins										
1. Typical burin			1			4	2		7	
2. Atypical burin	1	1							2	
3. Burin composite							2		2	11
Perforators										
1. Typical perforators										
2. Atypical perforators		1				1	1		3	3
Backed knives										
1. Typical backed knife		3	3			2			8	
2. Atypical backed knife			1			2	2		5	
3. Naturally-backed knife	5	4	1	2		22	7		41	
4. Backed knife composite			1						1	55
Truncated Pieces		4	2	1		4	4		15	15
Notches and Denticulates										
2. Notch	4	2	3	1		7	11	1	29	
3. Denticulate		2		1		10	2		15	
4. Bec burinant										
5. Distally notched	1					2	1		4	48

	M147	M150	M151	M155	M156	V200	G44 & D/G44	D254	Class Totals	Totals
Various Retouched Pieces		2	5			5	6		18	18
Divers			1				1		2	2
Tool Totals	59	171	139	53	27	230	340	11	1030	1030
Unretouched non-Levallois flakes and fragments	14	53	23	12	10	32	32	3	179	
Unretouched non-Levallois blades and points	3	17	16	3	3	32	41		115	
Cores	7	40	14	11	9	41	31		153	447
Grand Total	83	281	192	79	49	335	444	14	1477	1477

Table B.3: Typological analysis of eight layers in Level B.

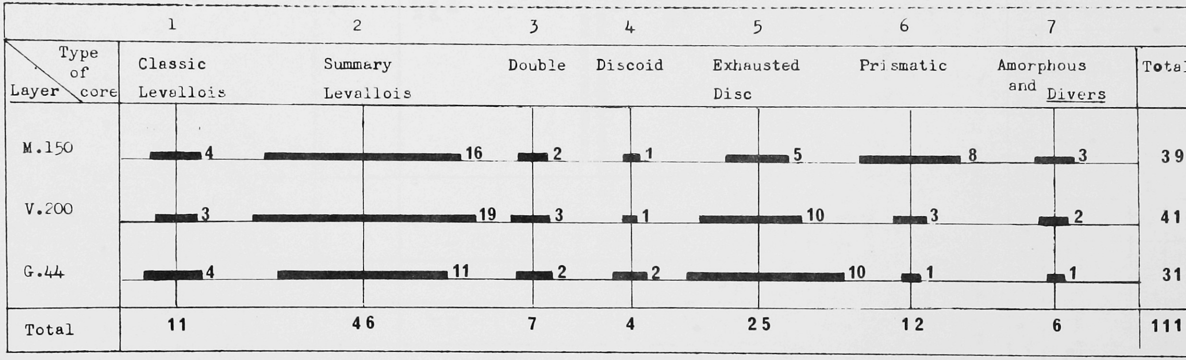


Fig.B.1: Seriation diagram to show the types of cores in a sample of 111 cores from three layers of Level B. In spite of low numbers in the individual levels, the overall dominance of types in columns 2 and 5 is clear.

materials and proportions of patinated (30%) and desilicified (10%) pieces are similar to those of the products.

The majority of cores were considerably worked down and their negative scars clearly resembled the form of some of the smaller flakes and blades (Plate B.11, nos.3 and 4); at least 23% are exhausted discs or core-bases. The amount of surface trimming varies in extent. Usually only the sides and upper surface, from which the flake or flakes were to be detached, have been trimmed, while the back retains the cortex. Since the cores are most often made on rounded pebbles, the back is naturally rounded from the outset (Plate B.10, no.2; B.11, no.1; B.12, no.2).

The striking-platform has often been carefully prepared, the small removal facets being almost invariably set at right angles to the flaking-surface (Fig.B.5); although a few have plain striking-platforms (Table B.4), the most frequently occurring type of platform showing rough and large facets (Plate B.10, nos.1 and 2).

The proportions of core-types in Level B are very different from those of Level C (the Acheuleo-Yabrudian), even though the same types are present in both; while in C the prismatic and Mousterian types are dominant, in B the basic type is a Levallois core, usually unidirectionally-prepared (40%), but quite often of the bipolar type. On the whole, while they form a more homogeneous group, the Level B cores resemble those of Level C in their rough and ready aspect, which somewhat masks or diminishes their 'Levalloisian' status. As to dimensions, if the axis of the last removal in worked-out cores is called the length, only one specimen is longer than wide, and the majority are slightly wider than long (cf. Fig.B.2). The present thickness of the cores is also a reflection of their worked-out condition, but although the width/ thickness ratios show a positive skew towards thin, flat cores, the greatest number of cores are still nearly as thick as they are wide (the 1.5 - 1.99 class; see Fig.B.3).

Even though some of the striking-platforms of the cores are fairly long and thin, in their present state, none would be capable of yielding a new blank with a chapeau-de-gendarme butt. Flakes with that feature do however occur plentifully among the products. The thickness of the striking-platform area is usually the same as the present thickness of the cores.

A. CORES WITH PERMANENT STRIKING-PLATFORM

CLASSIC LEVALLOIS: single striking-platform, multi-convergent preparation, for flakes, 10 (Plates B.10, no.1; B.14, no.6); for points, 2 (Plate B.10, no.2)

These 12 pieces form only 7.2% of the cores, a percentage which is reflected in the products in Level B: only 4.5% show distinct multiconvergent preparation of their dorsal surfaces. None of the pieces from stratified levels is as well-made as the piece from a mixed layer shown in Plate B.14, no.6, and none is as large as the two drawn pieces.

The piece in Plate B.10, no.1 is for broad Levallois flakes and has an impurity (desilicification) in the centre of the

Striking platforms per core	Number of cores	Striking platforms with recognisable preparation					
		Plain	Faceted	One plain, one faceted	Both faceted	All faceted	Mixed
Single	24	2	19				
Double	22			8	9		
Multiple	9					6	3

Table B.4: Analysis of the striking-platform of a sample of 55 Levallois and prismatic cores from Level B. Sample from the Cambridge collection. Eight specimens could not be classified (three single, five double).

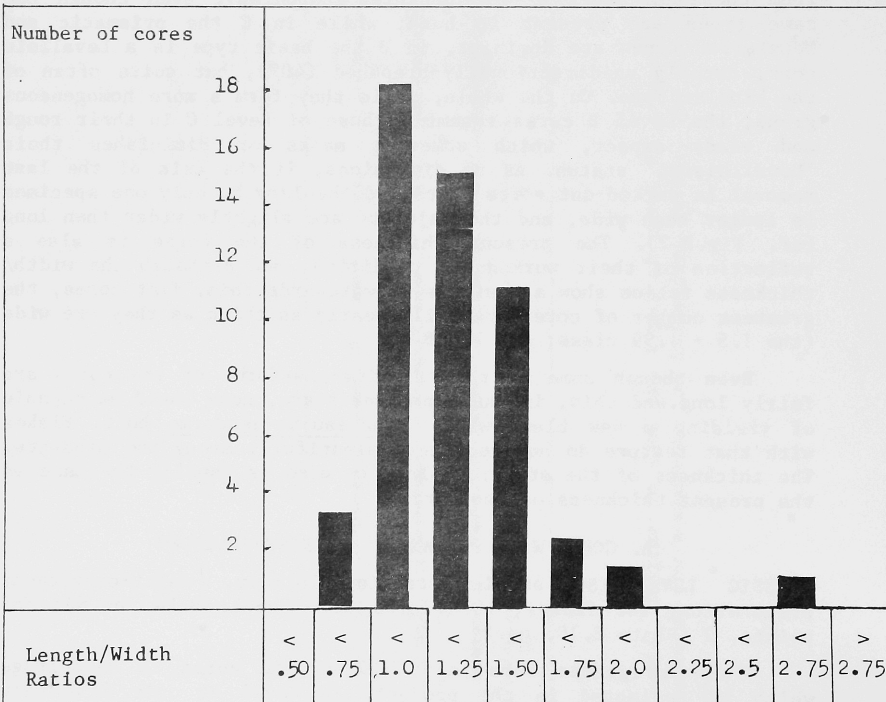


Fig.B.2: Length/width ratios of 51 cores from Level B, the cell interval being 0.25. Sample from the Cambridge collection.

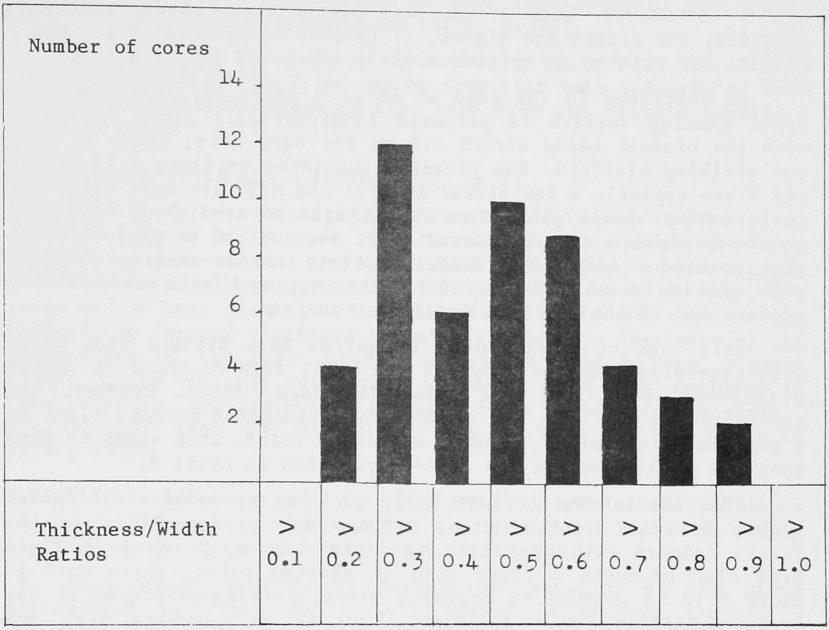


Fig.B.3: Thickness/width ratios of 51 cores in Level B. Sample from the Cambridge collection.

negative scar of the last flake to be struck off. The striking-platform is very poor. The piece in Plate B.10, no.2 is made on a pebble, with rough multiconvergent preparation of the upper surface and negligible side and back trimming. It was evidently made to produce points, but is now very worked down.

SUMMARY LEVALLOIS, TYPE A: one-axis preparation, single striking-platform, for flakes and blades, 17 (Plates B.10, no.4; B.12, nos.2 and 5); for points, 28 (Plates B.12, no.1; B.13, nos.11 and 12)

As described in the case of Level C cores of this type, the upper flaking surface is prepared longitudinally along one axis, with the product being struck off on the same axis; there is only one striking-platform. The pieces illustrated in Plate B.12, nos.2 and 5 are typical. A few pieces in M151 and M150 are more discoidal in form, but usually this type is prepared on a slightly elongated nodule in which a natural narrowing at one end can be exploited, so that pointed blades and triangular points can be readily obtained with little or no side or back trimming, and with very simple preparation of the platform and dorsal surface.

This type of point core with cortex base differs from types with carefully-prepared ridge at the back, such as occur at Shukba D (Garrod, 1940), and Jerf Ajla (Schroeder, 1966). However, the end-result is the same - a symmetrical triangular pointed flake or a parallel-sided blade, with or without a point. This seems to have been the main object of the core-preparation in Level B.

The piece shown in Plate B.12, no.1 has produced a triangular flake, but the point aborted, perhaps due to impurities in the flint; compare with the flake in Plate B.2, no.2. No.2 in Plate B.12 also produced a flake with an aborted point, while no.5 in Plate B.12 is unusual in having a plain striking-platform; it has produced blades. No.4 in Plate B.10 is very worked down and produced a narrow parallel-sided flake, typical of Level B (cf. for example Plate B.8, no.5); it has a carefully-faceted striking-platform. Some pieces from M150 and M151 are reminiscent of the point-cores characteristic of Abu Sif, illustrated by Neuville (1951, Fig.23, no.12), and of many in the collections from Tabun D.

SUMMARY LEVALLOIS, TYPE B (one axis preparation, double striking-platform); for flakes and blades, 15 (Plate B.11, no.1); 'Nubian cores' for points, 2.

These bipolar (or bidirectionally prepared) cores are made in the summary way as were the unipolar cores, with a minimum of side or back preparation. However, a second striking-platform was made on the opposite end. According to the reconstruction of the Levallois methods by Tixier, Inizan and Roche (1980), such an additional platform allows a series of narrow flakes or blades to be detached, in series, alternately from each end. Whether this was the case with the cores under discussion, or whether the second platform merely formed part of the preparation of the flaking-surface, must remain open to question. In any case, this is a definite core type, and has been noted from other areas, e.g. a good example occurred in Tabun D (British Museum, a specimen marked Tabun D.31.90). As to the point cores, the second platform seems to

have formed part of the preparation needed for the detachment of one pointed flake, in the manner first described by J. and J. Guichard (1968) on Nubian material. The characteristic feature on struck 'Nubian cores' is the high 'nose' remaining on the distal end. This type is very rare in the Bezez sample studied here, but traces of further specimens may be seen from study of the distal ends of some plunging blades (see below, p.290).

In comparing the core illustrated in Plate B.11, no.1 with that in Plate B.10, no.2, it can be seen that only a degree of more careful preparation separates this type from the classic Levallois tortoise core.

DOUBLE (BACK-TO-BACK), 9 (Plate B.12, no.4)

This type has already been described in Level C. The piece shown in Plate B.12, no.4 is a Levallois core of classic type (right view), re-used on the base, where it has been struck along a different axis. It must be added that, in the case of some rare cores which have been flaked on the base, it is not easy to say whether the 'second flaking-surface' might be more than part of the preparation of the core; only pieces which seem to have yielded flakes of useful size from their underside have been included in this category. Similar cores, termed 'change of orientation cores', are reported from the Mousterian site of Rosh Ein Mor (Crew in Marks, 1976).

PRISMATIC (products struck off along the long axis of the pebble or nodule); with single platform on the diameter, 13; with double platform on the diameter, 3 (Plate B.13, no.10)

This group consists of exaggerated versions of the piece illustrated in Plate B.12, no.2, which is tending towards a prismatic core. Some have had removals from three sides of a truncated and split pebble, i.e. down the sides as well as across the flaking-surface, from a semi-circular striking-platform. Generally the piece will stand upright on this platform, which is the diameter of the pebble; this is in marked contrast to the wavy or curved (in plan) platforms of Levallois cores, some of which would give the product a <u>chapeau-de-gendarme</u> butt. Plate B.13, no.10 shows a double core with keel-shaped profile. There are 10.4% prismatic cores in Level B, in contrast to 23% in Level C.

CORES WITH NON-PERMANENT PLATFORM

MOUSTERIAN (uniconical, discoid in plan, with flaking-surface both across the diameter and down the axis towards the peak of the cone), 8 (Plate B.12, no.3)

This is a very atypical group of small and rough pieces, and appears to consist mainly of cores which were discarded. Some, especially those from V200, resemble cores of Clactonian type such as were found in Level C. One piece from M150 has a retouched ridge at an acute angle, on one surface, which suggests that it might have been a biface-fragment before being re-used as a core.

EXHAUSTED DISCS, 35 (Plate B.11, nos.2, 3 and 4)

This is the most abundant single type, amounting to 22% (amalgamated); compare this figure with the 24.4% for the same type in Level C. Specimens range from fairly rough and globular, rather than discoid, pieces, on pebbles (Plate B.11, no.4) to neater, disc-like pieces which, however, have jagged edges with sharp points; these are present even on the specimen shown in Plate B.11, no.3. No.2 in this Plate is unusual in having a completely-flaked base, and seems to represent a bipolar Levallois core.

AMORPHOUS AND DIVERS CORES, 11 (Plate B.10, no.3)

The small core illustrated has a faceted striking-platform and appears to have produced miniature flakes. One from V200 is a core on a thick, non-Levallois flake. Two other pieces from V200 have an appearance intermediate between polyhedric balls and globular discoid cores, but one is broken and the other has deep negative scars similar to those found on 'Clactonian' cores; this piece is tending towards a chopping-tool.

GENERAL REMARKS ON THE CORES

The rarity of classic multi-convergent (i.e. one preparation, one flake) Levallois ('tortoise') cores in Level B is to be noted, and could be accounted for by two factors: first, blades and parallel-sided flakes, as well as pointed and elongated flake forms, all of which call for one-axis cores, seem to be the desired objects of most of the core-preparation. Secondly, such blades and points could be obtained from cores made on locally available beach pebbles; these pebble cores seem to need far less preparation than is needed to produce Levallois 'tortoise' cores.

Such cores are a common Near Eastern form, which Neuville (1951) misleadingly (since they are not so globular) calls "*discoïdal globuleuse - à épannelage plat*"; they grade into what Neuville calls "*prismatique globuleuse*" (*ibid.*, fig.27, no.8), i.e. prismatic unipolar and bipolar cores.

The latter are probably an evolved form of the Acheulean prismatic or orthogonal flake-blade cores made on split pebbles, which were discussed in connection with Level C cores; here, however, we find them being pre-shaped to a greater extent, as Summary Levallois cores. We recall that, in another phase when elongated flakes and blades were needed, similar cores were resorted to: the so-called Abu Halka and Abu Sif point cores of the Levantine Early Upper Palaeolithic (Azoury, 1971).

THE FLAKES

As Table B.2 shows, the majority of the products struck from the cores are flakes (698). Blades are also fairly numerous (354), as are points (224). The two latter forms were probably more numerous originally, given the number of broken or incomplete flakes. An analysis of the butts and morphology of pieces in the Cambridge (and London) collection of 660 pieces is shown in Table B.5; the layers with poor samples are excluded. In Fig.B.4,

Levallois pieces	Plain	Faceted	Dihedral	Linear	Removed	Absent	Total
Flakes	40	163	13	2	13	22	253
Points	15	95	9		1	5	125
Blades	17	58	5		8	6	94
Total	72	316	27	2	22	33	472
Non-Levallois pieces							
Flakes	47	38	7		11	17	120
Points		2				1	3
Blades	15	24	6		16	4	65
Total	62	64	13		27	22	188
Grand Total	134	380	40	2	49	55	660

Table B.5: Analysis of the butts of 660 flakes and blades from Level B in the Cambridge collection.

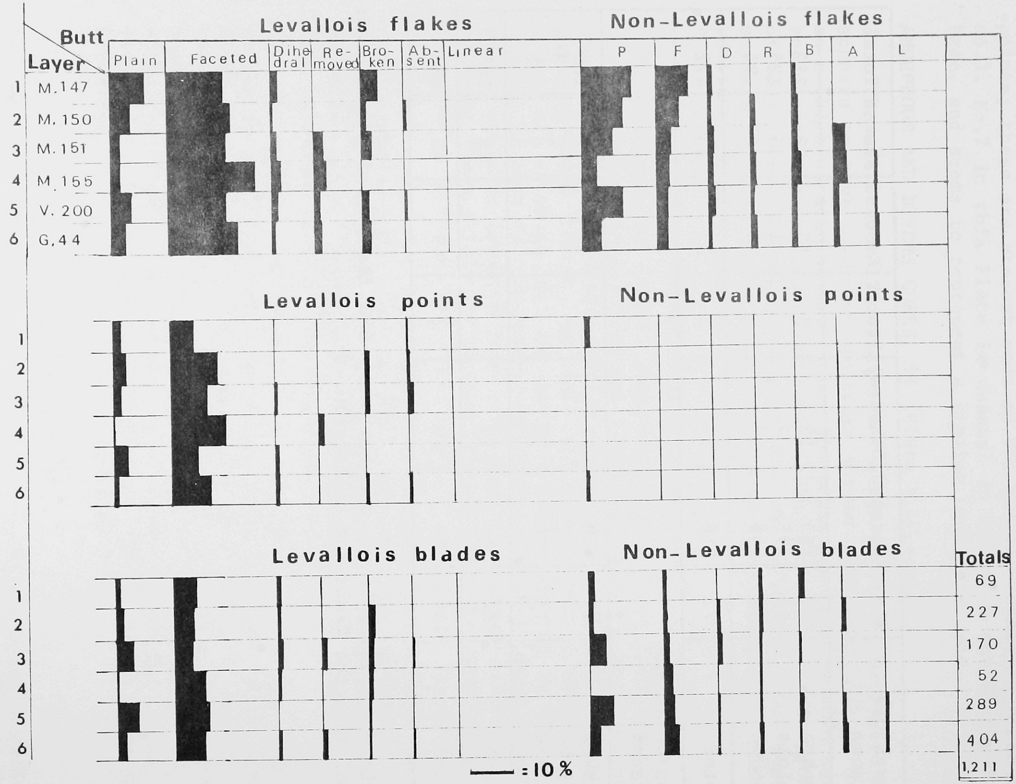


Fig.B.4: Distribution of the types of butt and forms of Levallois and non-Levallois flakes, points and blades in six layers of Level B. 1,211 observations.

some by-products of the Levallois technique (crested guide-flakes, cortex flakes etc.) are counted in the Non-Levallois category.

BUTT-ANGLES (data from the Cambridge collection)

Measurement of the angle between the dorsal surface of the flakes and the butt was carried out on 517 Level B Levallois flakes. The measurement was taken above the cone of percussion whenever possible (see Fig. B.5).

Four fifths of the butts were found to have been prepared either at right angles (101 pieces), at slightly acute angles (c. 80°; 161 pieces) or at an angle of c. 70° (159 pieces). The number of pieces with lesser or greater angles was negligible (96), but these included some two dozen with 'Clactonian' butts. The complementary angles (i.e. the angle between the butt and the ventral surface, the angle which was measured in the case of Level C flakes) are, of course, for the most part either right angles or slightly obtuse angles; these measurements have already been shown graphically on Fig. C.5, where it can be seen that the Level B knappers adhered more closely to the right angle, as is usual when the Levallois method is used, than did the Acheuleo-Yabrudians.

BUTT PREPARATION (data from the six layers analysed in Fig. B.4)

As Fig. B.4 shows, and as one would expect, the largest group is that with faceted butts, which are especially frequent on the Levallois flakes and points; in contrast, in the non-Levallois group, plain butts outnumber the rest. Very few flakes have had their butts removed by deliberate retouch (54 out of 1,207 or 4.2%), in contrast to the flakes of Level C (14%; see Fig. C.4).

DIMENSIONS

Data on absolute measurements are taken from the Cambridge collection. Length and width were measured on the axis of the flake's removal, regardless of the axis of the tool; in most cases these two axes were the same. The thickness was measured twice - once at the point of greatest thickness (G/Th) of each piece, and once half-way up the length (½L/Th), or, in the case of transverse flakes, half-way along the width. The difference between these two measurements on any one piece can range from zero to 6mm. in the case of pieces with thick butt or bulb. The difference in 80% of the cases falls in a narrow range of 1 - 3mm. There is a tendency for pieces to be thickest at the butt, but nevertheless fully a third of the sample had their maximum thickness at the half-way point or very near it. As we saw from Fig. B.3, the Level B knappers had achieved a good degree of standardisation in the thickness (or at least the ½L/Th) of their flakes: 72% fall into a range of 0.75 of a centimetre, in contrast to the considerably varied thicknesses of Level C flakes.

Fig. B.6 shows that the absolute lengths of the measurable flakes and blades (tabulated in Table B.6) is predominantly in the 6 - 7cm. range, and the curve shows a positive skew towards blade forms; it is inferred that a substantial number of the broken or retouched pieces which now measure 6 - 7cm. would have been

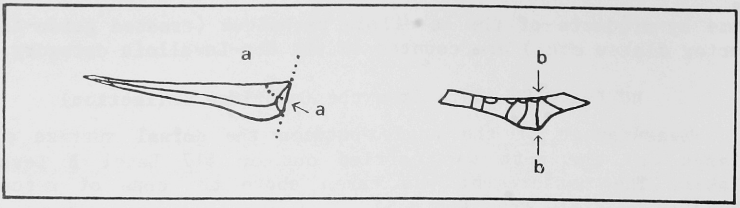


Fig.B.5: Measurement of the butt-angles of Level B flakes. a - a = the angle measured; b - b = the position of the measurement.

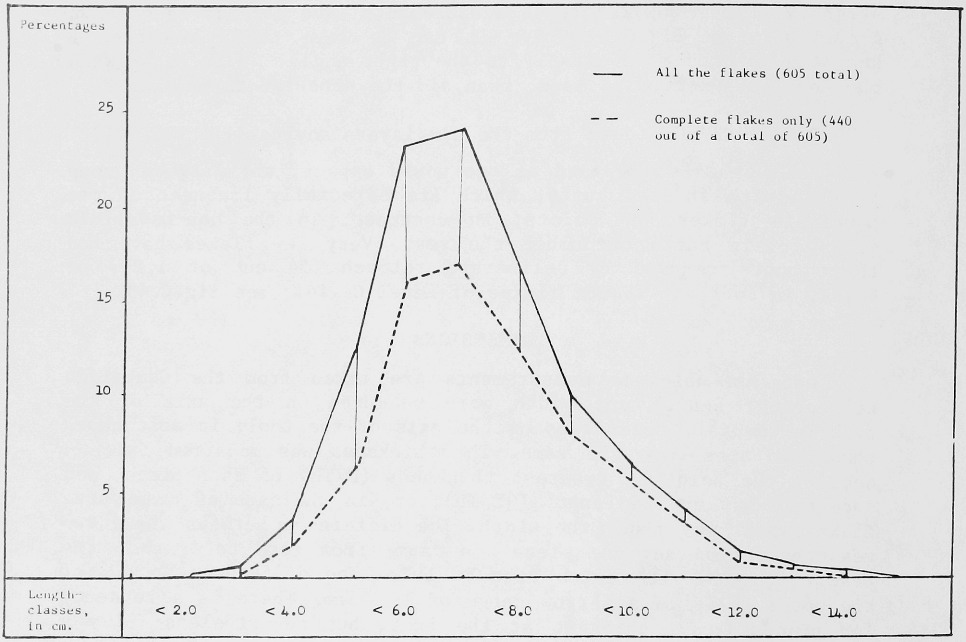


Fig.B.6: Percentage frequency curve for absolute lengths of 605 flakes and blades in Level B. For the actual totals in each cell, see Table B.6.

Grouped absolute length classes	1. Number of complete pieces		2. Number of incomplete pieces		Total number of pieces per class	
	No.	%	No.	%	No.	%
Less than 3.0cm.	1	0.2	-	-	1	0.2
Less than 4.0cm.	11	2.5	9	5.4	20	3.3
Less than 5.0cm.	39	8.9	32	19.3	71	11.7
Less than 6.0cm.	100	22.7	43	26.0	143	23.6
Less than 7.0cm.	102	23.2	43	26.0	145	24.0
Less than 8.0cm.	76	17.3	19	11.5	95	15.6
Less than 9.0cm.	50	11.4	9	5.4	59	9.8
Less than 10.0cm.	33	7.5	5	3.0	38	6.3
Less than 11.0cm.	18	4.1	1	0.6	19	3.1
Less than 12.0cm.	6	1.4	3	1.8	9	1.5
Less than 13.0cm.	3	0.7	1	0.6	4	0.7
Less than 14.0cm.	1	0.2	-	-	1	0.2
Totals	440	100.1	165	99.6	605	100.0

Table B.6: Level B flakes and blades: numbers of complete and incomplete pieces per length class.

	Flakes			Blades						
L/W ratios	Below 1.0	1.0-1.49	1.50-1.99	2.0 2.49	2.50-2.99	3.0 3.49	3.50-3.99	4.0-4.49	4.50-4.99(+)	Total
No. of pieces	31	134	153	126	32	17	1	4	2	500
Per-cent-ages	6.2	26.8	30.6	25.2	6.4	3.4	0.2	0.8	0.4	100.0

Table B.7: Frequencies for the ratio length/width, for 500 complete flakes and blades from Level B, with a cell interval of 0.5 (see Fig.B.7 for a frequency graph for this ratio for the same specimens at a cell interval of 0.25).

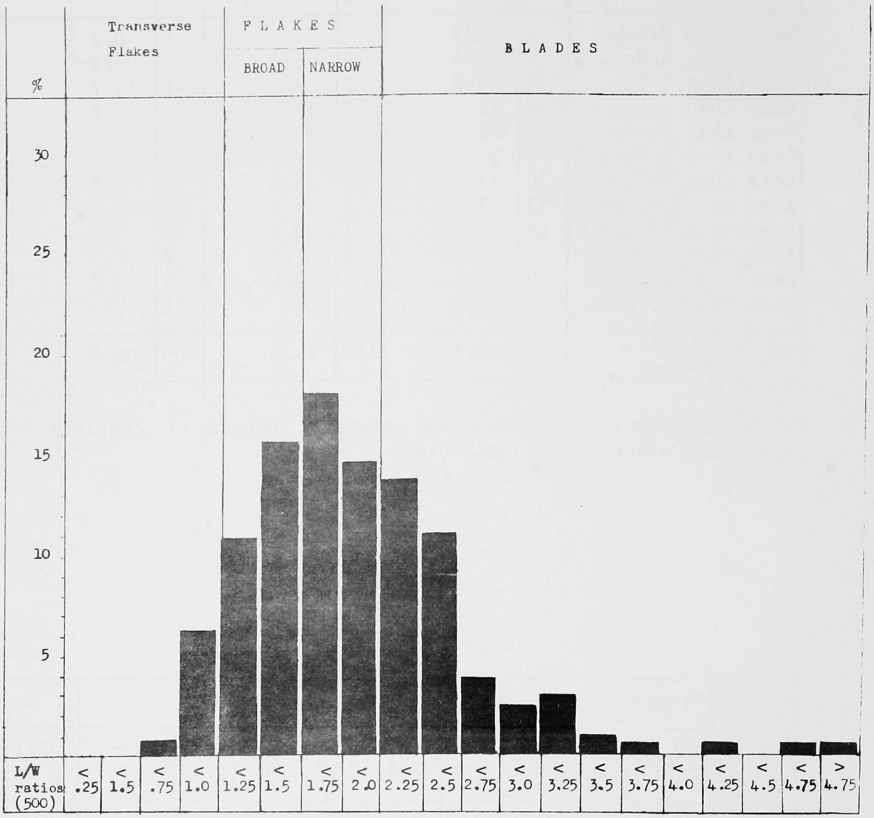


Fig.B.7: Length/width ratios of 500 flakes and blades of Level B, with cell interval of 0.25; the tendency towards production of narrow flakes is to be noted. Compare with Fig.C.3.

classifiable as blades had they been complete. The curve should be compared with the one shown in Fig.C.3, which shows the greater degree to which the lengths of Level C flakes were modified (by retouch, thinning or breakage). The tendency towards the production of narrow flakes or blades is confirmed in Fig.B.7; again, this may be contrasted with the Level C flakes (Fig.C.3). The peak percentage on Fig.B.7 represents a group of narrow Levallois flakes and triangular points with parallel or sub-parallel sides, which were evidently struck off unidirectionally-prepared cores.

THE TOOLS

A. PEBBLE TOOLS

CHOPPING-TOOLS, 9 (Plate B.9, nos.1 and 4)

One is a pebble-tool, an elongated fairly flat pebble of chert measuring 9.8 x 6.7 x 3.7cm., with dark brown cortex and chestnut patina. It was used in three ways: as a chopping-tool, as a hammerstone, and as an anvil. The anvil marks occur on the central part of both of the flat cortex surfaces of the pebble, concentrated in a small area 1 cm. across. Four areas of hammerstone marks are slightly more diffused, measuring c. 1.5cm. across; these occur on both the 'corners' of the thin sides at the base of the pebble - the logical part of it with which to strike a core. This piece was clearly used in the production of tools. One end was either previously or subsequently truncated by faceting on to both flat surfaces (2 wide facets on one side, 4 on the other) forming a chopping-tool with a sharp, slightly wavy, edge (Plate B.9, no.1).

One rather atypical specimen was seemingly made on a heavy flake-blade from a Clactonian-like core, with cortex back. The chopping edge is formed longitudinally along one edge by deep alternate flaking which has removed butt and bulb; it measures 10.3 x 5.7 x 3.3 cm.

Most of the other specimens resemble Plate B.9, no.1, except that more cortex has been removed from each face. Two pieces are formless and rather battered blocks of chert, with alternate bifacial retouch along one longitudinal edge.

As to their distribution in the layers, chopping-tools are rare in all except M155, where four examples occur, forming 7.7% of the tools.

B.i. BIFACES (total 9)

AMYGDALOID, 1

This is a well-made piece from M156 measuring 11.5 x 8.5 x 4.3 cm.; it is somewhat broken up, and patinated buff.

PARTIAL, 2 (Plate B.9, no.2)

Both are from G44; no.2 in Plate B.9 measures 9.55 x 5.25 x 2.2cm., has a partially cortex back and is pitted with thermal fractures. The other, measuring 8.2 x 5.5 x 3.3cm., has a thin and sharp tip, while most of one side and the base retain thick

cortex. One edge is slightly concave in plan; this piece tends toward a bifacial racloir.

DIVERS, 3 (Plate B.9, no.3)

No.3 in Plate B.9 is an ogivo-triangular, thick biface with a flat straight base and rounded working edge. It is completely patinated white and desilicified; it measures 8.3 x 7.1 x 4.0cm. The other two are small and irregular pieces.

FRAGMENTS, 3

The piece from M151 is an edge fragment of a biface, and has a greasy shine. The other two fragments are retouched more extensively on one side than the other, and one may have been a bifacial racloir. (N.B. Another fragment of a biface is present in Level B; it was reworked into a racloir.)

The nine bifaces in Level B were at first regarded with some suspicion by the excavators; they were listed, together with certain racloirs, as a 'Yabrudian element', and were suspected of being re-used Level C artifacts. However, Jelinek (1981) has recently distinguished some layers between Tabun E and D with assemblages of Transitional aspect; we shall return to this subject later.

B.ii. OTHER HEAVY-DUTY TOOLS (total 6)

POLYHEDRON, TYPE b, 3

These are identical in type to the polyhedrons described in Level C. One is a small sub-circular piece, much battered and heavily-patinated, and has a greasy shine. The largest piece (from M151) has no shine, and is more globular, with 10-11 positive facet scars. The other is broken (V200). It seems likely that these pieces were re-used in Level B. An additional number were found in the mixed units, but only a representative sample was kept.

DISC, 2

Both are made on worked-out Levallois cores of grey flint. The sharp edges around the cores' periphery have been smoothed off by neat, small retouch and these pieces resemble the core shown in Plate B.11, no.3.

RABOT, 1

This piece is made of coarse chert, and measures 6.5 x 6.3 x 4.3cm. It appears to be part of a polyhedron, which split into two and was then retouched into a domed scraper.

C. LEVALLOIS TOOLS (699)

TYPICAL LEVALLOIS FLAKES, 308 (Plates B.1, nos.1-5; B.8, no.4). Data from the Cambridge collection.

Included are 12 slightly retouched pieces and eight pieces with squamous flaking at the distal end; the remainder are parallel-sided or sub-triangular. Few are rolled, crushed or

burned, but 70 appear to show evidence of use, most often at or near the tip. Seventy pieces in this group are incomplete: the dimensions of the complete pieces range from as large as 10.0 x 6.0cm. to as small as 3.5 x 3.0cm. The squamous flakes (Plate B.8, no.4) have battered and splintered distal ends, with squamous flaking on both surfaces. Three have additional notches. Three have only inverse retouch. Similar battering of the distal ends of flakes is seen on many of the other tools described below; they are however not true pièces esquillées since there is no similar splintering on the proximal ends.

ATYPICAL LEVALLOIS FLAKES, 68 (Plate B.1, no.6)

The same comments apply here as to the above group, but these pieces are badly achieved or have some cortex remaining. The largest measures 8.0 x 7.0cm. and the smallest 4 x 5cm.

LEVALLOIS POINTS, 110 (Plates B.1, nos.7-9; B.2, nos.1, 3 and 4) and ELONGATED LEVALLOIS POINTS, 24 (Plate B.2, no.2)

These are well-made symmetrical or sub-symmetrical pointed flakes, the elongated ones of blade length, 20 specimens being fairly large. The longest is incomplete but still measures 11.1 x 4.4cm., while the shortest is 4.1 x 3.3cm. Seven of the elongated points curve off to the left, in the Abu Sif manner (see below). The majority have faceted butts. As a group, these points seem lighter and more evolved than those from Abu Sif.

LEVALLOIS BLADES, 161 (Plate B.2, nos.5-9)

As in the flake group, the blades grade from heavy archaic types to more delicate forms; the longest complete piece in this group measures 11.5 x 4.1cm. In the Cambridge collection, there are 15 heavy, large blades, about 18 of medium (c. 8cm.) length, and a group of 30, some broken, with an average length of 6cm. The largest blades are comparable in size to pieces reported from Jerf Ajla (Schroeder, 1969a; b) and Doura Cave (Akazawa, 1974). One long, atypical plunging blade was struck from a bipolar Levallois core, and has abrupt faceting at the distal end.

RETOUCHED LEVALLOIS POINTS, 15 (Plate B.3, no.1)

These are typical, and grade into backed knives.

ELONGATED RETOUCHED LEVALLOIS POINTS, 13

Of this group, six of the heavier and larger points resemble Abu Sif types (Neuville, 1951, figs.22 and 25) and are similar to specimens from Skhul B (cf. Plate LV, no.3 of McCown in Garrod and Bate, 1937), with the heavily-retouched tip curving off to the left (3 cases) or right (1 case). Two of these have heavy, plain butts, with side méplat, but on all the retouch is flat scalar, rather than resolved. Three of the other points are inversely retouched, as are some from Tabun D (Garrod and Bate, 1937, Plate XXXVII, no.1), and in some cases the retouch is slightly denticulated.

D. MOUSTERIAN TOOLS (total 12)

MOUSTERIAN POINTS, 7 (Plate B.3, nos.3, 4 and 6) and ELONGATED MOUSTERIAN POINTS, 2 (Plate B.3, nos.2 and 5)

The elongated specimens are made on Levallois flakes, and the others on non-Levallois flakes; the finished form of the latter has been determined by retouch. On No.3 in Plate B.3 there is a natural slope on one side, hence less retouch. All have fine flat to semi-abrupt retouch; in two specimens the retouch on the left-hand edge is denticulated. All the complete specimens are about 7cm. long and 4.5cm. wide; the elongated ones measure c. 10.0 x 4.0cm., and 8.0 x 3.0cm. respectively. The tips are thin and flat and, where complete (6 specimens), sharply pointed.

PSEUDO-LEVALLOIS POINTS, 3

These are triangular flakes prepared along one axis but struck off at an angle, probably from a discoid core. Their rarity reflects the predominance of the unidirectional Levallois method used in Level B.

E. RACLOIRS (total 126)

As Table B.3 and Fig.B.7 show, the categories present, and their proportions, do not vary significantly from layer to layer; however, a greater variety is seen in V200. No racloir is very large, and few are more than 3 cm. wide. The condition of the racloirs is good; only one has visible thermal fractures (G44) and none is rolled. One piece from M155 has possible wear polish on the tip and flake-surface.

The retouch is predominantly flat scalar, marginal and semi-abrupt; however, on many pieces there are two kinds of retouch, sometimes on the same edge and sometimes on different edges (e.g. Plate B.4, nos.1 and 3). Fourteen specimens have a finely but distinctly denticulated edge (e.g. Plates B.4, no.6 and B.5, no.3); the edge of the others is even, without however resembling the ruler-straight crushed edge typical of some Yabrudian racloirs. Slight inverse retouch occurs on nine specimens, and five have slight inverse thinning retouch on the butt.

The morphology of the Level B racloirs contrasts strongly with that of those from Level C - 75% are made on Levallois blanks, while bifacially retouched types and pieces made on transverse flakes are very rare; however, six offset and transverse racloirs in Level B do have a 'Yabrudian aspect'.

The racloirs of Level B form the largest of the retouched tool-classes, though they are considerably outnumbered by unretouched Levallois tools. This is in contrast to Level C where the racloirs dominated all classes.

DESCRIPTION OF THE RACLOIRS IN CATEGORIES

The drawings illustrate the general uniformity of style throughout the layers, as well as the fact that most racloirs fall into the usual Levantine Mousterian types; this renders detailed descriptions of racloir categories superfluous.

SINGLE STRAIGHT RACLOIRS, 16 (Plates B.3, no.8; B.5, nos. 1 and 3); SINGLE CONVEX RACLOIRS, 32 (Plates B.3, nos.7 and 9; B.5, nos.4 and 8); SINGLE CONCAVE RACLOIRS, 11 (Plate B.5, no.2)

The single racloirs outnumber all other categories. Some of the pieces counted as concave have, in fact, slightly sinuous edges. Several have vertical cortex backs, but the majority are made on Levallois blades or points; two are made on truncated-faceted flakes. Those with very fine, flat retouch grade into the Retouched Levallois Point category.

DOUBLE STRAIGHT RACLOIRS, 2; DOUBLE STRAIGHT/CONVEX RACLOIRS, 5 (Plate B.4, nos.1 and 8); DOUBLE STRAIGHT/CONCAVE RACLOIRS, 2; DOUBLE BICONVEX RACLOIRS, 9 (Plate B.4, nos.2-4); DOUBLE BICONCAVE RACLOIRS, 4; DOUBLE CONCAVO-CONVEX RACLOIRS, 6 (Plate B.5, no.7)

The double racloirs are quite typical; one of the double straight pieces (V200) is very well-made on a triangular flake, with the feathered-out distal area separating the retouched edge. Another (V200) has Quina retouch, and is made on a pseudo-Levallois point. Several pieces have invasive, slightly stepped scalar retouch on one edge, and marginal, semi-abrupt, parallel retouch on the other edge (V200, M150). Four specimens may have originally been convergent racloirs, but the tip is broken off. Many show signs of heavy use.

CONVERGENT STRAIGHT OR STRAIGHT/CONVEX RACLOIRS, 7 (Plate B.4, nos.6 and 7); CONVERGENT BICONVEX RACLOIRS, 7 (Plate B.4, no.5)

The convergent racloirs form the best made and most regular category; some are made on asymmetrical points, reminiscent of those at Abu Sif (Plate B.5, no.7), while others are made on more delicate triangular Levallois points. Two pieces from M151 and V200 are on buttless elongated Levallois points. One 'Kelb' flake was used as a blank; this type of flake is characteristic at Naamé and Ras el-Kelb and is an oval flake, flat at the proximal end of the dorsal surface, evidently struck from a core on an axis different from that of the preparation (Copeland, 1979). The Level B specimen was used to make a convergent racloir.

Several pieces show macroscopic signs of apparent heavy use, in the form of sporadic inverse damage-scars below the working edge, smoothing of the ridges near the edges and polish on the flake-surface.

OFFSET RACLOIRS, 4 (Plate B.4, no.9)

These are rather atypical as a group. One is burned, and resembles types from Level C and another is similarly Yabrudian-like in having some bifacial retouch (Plate B.4, no.9), as well as a curved ("rocking-chair") profile.

TRANSVERSE STRAIGHT RACLOIRS, 1; TRANSVERSE CONVEX RACLOIRS, 1; TRANSVERSE CONCAVE RACLOIRS, 1

These are equally rare, but are more typically Levalloiso-Mousterian, with the exception of the convex piece which is made on a split nodule (V200). The latter has a thin and well-

made working edge, and steeply-rising (Quina?) faceting, truncated by a crack from a blow which failed to detach a flake. The straight specimen is made on a broad, unidirectionally-prepared Levallois flake.

INVERSELY RETOUCHED RACLOIRS, 8 (Plate B.5, no.5); ABRUPTLY RETOUCHED RACLOIRS, 2; ALTERNATELY RETOUCHED RACLOIRS, 4

The inverse racloirs are quite well-made, especially those from G44; conversely, the other two categories are rougher, with less regular retouch. One of the abrupt specimens (M151) is made on a naturally-backed piece and has a distinct nose or bec; the retouched edge is also partly denticulated. The other is either a racloir and backed-knife composite or a double racloir; it is made on an asymmetrical blade, and the abrupt edge is opposed to a thinner, inverse racloir edge, forming, in effect, a racloir with abruptly retouched back (M150). Two have alternating inverse and direct retouch on the same edge.

BIFACIALLY RETOUCHED RACLOIRS, 4 (Plate B.6, nos.1 and 3)

Layer G44 produced a bifacial racloir on an oval flake, much broken up and desilicified. Another piece, equally atypical of Level B, is a thick convergent racloir with both the base and the side thinned by inverse retouch, at one point bifacial (Plate B.6, no.3). On another piece, the inverse retouch may represent efforts to refresh the edge. A further re-used piece is illustrated in Plate B.6, no.1; it appears to have been the tip of a biface, struck off the parent piece on one lateral edge, in the same manner as the two illustrated from Level C in Plate C.11, nos.2 and 4. The edge on the lower left hand view on Plate B.6, no.1 (which would come from the central face of the original biface) has been re-worked.

F. END-SCRAPERS (total 17)

TYPICAL, 5

One is a nosed end-scraper on a flake, with butt removed, from G44. Another is an end-scraper on a cortex-backed flake-blade. The other three (from G44, M156 and D254) are denticulated scrapers on flakes, all buttless and in one case truncated.

ATYPICAL, 7

Three are made on the tips of Levallois points or blades, two are broad ended, made on the end of parallel-sided flakes, and the other two are made on a crested guide-flake and a plunging flake respectively. The retouch is sloping and irregular.

END-SCRAPER COMPOSITES, 5 (Plate B.6, no.2)

The drawn piece is a non-Levallois cortex-blade, with irregular racloir retouch down one edge; two others from G44 are racloir/end-scrapers, and there are two pieces with denticulated edges.

G. BURINS (total 11)

TYPICAL, 7 (Plate B.6, nos.4-7); ATYPICAL, 2; BURIN COMPOSITES, 2

The better specimens are made on thick cortex-flakes, two being single right-angle dihedral burins (nos.4 and 5 in Plate B.6), and one being a double burin. This latter has a dihedral burin opposed to another right-angle dihedral, which is formed by a burin blow on to the ventral surface opposed to a hinge fracture (Plate B.6, no.6). It has a Clactonian notch near the butt on one side. Three other pieces are made on Levallois points and are single-blow dihedrals (e.g. Plate B.6, no.7). Another is on a retouched Levallois blade (V200). One of the two composites is a burin plan made on a single straight racloir (G44).

This group does not differ markedly from the types of burins found at other Levantine Middle Palaeolithic sites; compare for example with those at Jerf Ajla, Sahba, Nahr Ibrahim North Cave, Douara and Tabun D (Schroeder, 1966; Solecki, 1970a; Akazawa, 1974; Garrod and Bate, 1937).

(Note: There are about 20 other pieces in Level B which might be classed as single-blow burins. The blows are directed on to the flake surface from the distal end of the piece; the angle of the possible burin-edge veers only slightly away from the natural edge of the flake, however.)

H. PERFORATORS (total 3)

ATYPICAL, 3 (Plate B.8, no.1)

All are thin flat flakes with white patina and are atypical borers, one of which is a naturally-backed piece with a racloir edge; alternate inverse retouch has detached a distinct beak at one corner of the distal end. The illustrated specimen also has one racloir or denticulate edge, in this case with an inverse notch, above which a blunt beak is formed, tending towards a bec burinant. It would seem that, just as in Level C, piercing tools do not form a distinct type; such pointed extremities as do occur are found on the Mousterian points or the backed knives.

I. BACKED KNIVES (total 55)

TYPICAL, 8 (Plate B.7, nos.1 and 3); ATYPICAL, 5 (Plate B.7, nos.2 and 4); BACKED KNIFE COMPOSITE, 1

This is a distinctive group, consisting of 8 typical (Plate B.7, no.3) and 5 atypical (Plate B.7, no.2) specimens, plus one composite. All but two of the typical specimens and one of the atypical are made on symmetrical elongated Levallois points, the others being made in two cases on Levallois flakes and in one on a non-Levallois flake. All but two (which have feathered-out tips, e.g. Plate B.7, no.2) are pointed, one being needle-sharp. Usually, the abruptly retouched back begins at the distal end and is vertical or sub-vertical; in one case the back is 0.9cm. deep and it is around 0.4 - 0.5cm. deep in the others. In three cases the backing occurs at the tip only (Plate B.7, no.4).

In two cases the backing is continued in the form of cortex, and in another case it begins as cortex and continues as nibbled retouch from the central part to the butt. The nibbling on the piece shown in Plate B.7 as no.1 is reminiscent of the retouch found on Amudian blades (Copeland, 1975).

Finally, in only two cases is the finger-rest on the left edge. As at Abu Sif Level C, this class of tool grades into the Retouched Levallois Point class (Fleisch, 1956).

The knife composite is from M151; one abruptly backed edge is opposed to an edge denticulated on one part, with semi-abrupt racloir retouch on the rest of the edge, and at the extremity is a small nose or bec.

NATURALLY-BACKED KNIVES, 41 (Plate B.7, nos.5-7)

Although other blades with perpendicular cortex back occur in the assemblage, these 41 pieces have been selected, both because of their handy shape and also because they show clear signs of use as knives, in the form of edge damage, including squamous flaking or small notches etc., on the working edge, the latter being in most cases convex or slightly wavy (Plate B.7, no.5). Three types of back can be noted: natural cortex (70%; Plate B.7, nos.6 and 7); trimmed, from core-preparation retouch (2.4%; Plate B.7, no.5); and combinations of those (2.0%). Included in the second type are knives on crested guide-flakes. The knives occur impartially on broad flakes, blades, segments of cores with triangular section etc., and are non-Levallois with only six exceptions. The largest piece measures 11.6 x 7.2 x 1.3cm. and is reminiscent of Jerf Ajla knives (Schroeder, 1969a; b).

J. TRUNCATED PIECES (total 15)

ABRUPTLY TRUNCATED PIECES, 9 (Plate B.8, no.5)

This category is an addition (as was 'naturally-backed knife') to the Mount Carmel typelist of Garrod: at Tabun such pieces, although noted on the index cards by the original excavators, were not separated as types. Nine are thin and flat Levallois flakes or blades, with the distal end truncated by abrupt direct retouch (Plate B.8, no.5). In three cases, this retouch is very slightly concave. Two pieces have additional notches; on one piece, the notch is wide and forms the continuation of the retouched edge on the inverse side of the piece. In six cases the truncation is oblique, while it is straight in the other three.

TRUNCATED-FACETED FLAKES, 6

These are rather rough, and one is double, similar to a piece from Level C (Fig.C.18b, no.1). As in Level C, they are listed here as types, but are not included in the cumulative graph percentages.

K. NOTCHES AND DENTICULATES (total 48)

NOTCHES, 29 (Plate B.8, no.2)

This is a minimum number from among many pieces which either grade into the denticulate group or into the 'utilised' group. The

notches are most often made by abrupt or sloping fine retouch. Eight pieces have one notch (inverse or obverse), and four pieces have double opposed notches. The notches are disposed as follows: bilateral opposed (3); unilateral (2); unilateral proximal (2); unilateral alternate (1); unilateral inverse (4); distal (4). This data is from the Cambridge collection.

DENTICULATES, 15 (Plate B.8, nos.6 and 7)

This is also a minimum number from a group of irregularly-notched pieces (Plate B.8, no.6). These were selected as having broad, denticulated, semi-abrupt retouch which seems intentional. Only three are on Levallois blanks (e.g. Plate B.8, no.7), but one is a heavy point of Abu Sif aspect, with bilateral inverse denticulations. Both alternate and alternant retouch (the latter meaning direct and inverse retouch on the same edge) are seen on the other pieces, often associated with further notching. Denticulate pieces do not seem to form a distinct type in the industry and it is accordingly fair to regard this as a somewhat subjective selection; these pieces grade into the familiar 'utilised or slightly retouched' group which are certainly not distinct types.

DISTALLY NOTCHED PIECES, 4 (Plate B.8, no.3)

These are well-made triangular Levallois flakes with pronounced concave retouch at the distal end. One is a very heavy flake (8.0 x 5.0 x 2.0cm.); it has a long, thin, heavily-faceted butt.

L. VARIOUS RETOUCHED PIECES (total 17)

INVERSE RETOUCH, 3; THICK ABRUPT RETOUCH, 3

These are Levallois flakes with about 3cm. of abrupt retouch on one lateral edge, near the base. This is perhaps not a very distinctive class, since similar retouch occurs on portions of other tools.

FINE ABRUPT RETOUCH, 10; BIFACIAL RETOUCH, 1 (Plate B.8, no.8)

The drawn piece is a tabular slab with irregular bifacial retouch; it is broken at both extremities, and might have been an atypical chopping-tool.

M. DIVERS

HAMMERSTONES, 2

One is part of a cylindrical pebble of Nummulitic Eocene cherty flint measuring 7.3 x 3.5 x 3.5cm. The break is flat and is covered with a dark red concretion; other red streaks (ochre?) occur at the 'nose' of the piece. The patina is a greyish buff, the original colour of the flint being creamy white. A small concentration of pock-marks is seen near the break, indicating that this piece was used as a hammer. This makes the third hammerstone to be found in Level B; one was classified as a chopping-tool (see

above) and the other is a Levallois core on a cylindrical pebble fragment, with pock-marks and striations.

It will be recalled that other hammerstones have been reported from Middle Palaeolithic sites in the Levant, e.g. from the Lower Levalloiso-Mousterian level, B, at Skhul (McCown in Garrod and Bate, 1937); these were described as battered flint nodules. More recently, hammerstones were reported from the Haua Fteah by McBurney (1967, p.113). Ochre has been reported from Qafseh by Vandermeersch (1972), in the Middle Palaeolithic levels.

UNRETOUCHED NON-LEVALLOIS FLAKES AND BLADES

This group comprises 185 flakes and fragments, and 115 blades and points, which were selected from a larger number of rough and broken pieces during the first sorting. The majority are trimming-flakes or core-preparation cortex blades. There are at least four crested guide-flakes, and one core-preparation flake with a 'wandering' ridge such as occurs on Clactonian cores. On one unusual piece, what appears to be a central ridge is actually the lateral edge, the dorsal surface inclining underneath. There is a group of plunging-blades on the distal ends of which are traces of the opposite platform of narrow bipolar blade-cores, with neatly faceted striking-platforms. One measures 10.0 x 4.0 x 1.0cm., an indication of the substantial size of the cores before they were worked down. The presence of these large plunging blades provides us with some information concerning core-preparation techniques employed by the Level B knappers which was all but missing, or only hinted at, in the sample of cores studied here. We infer that the range of larger blades and points which are present in the assemblage were struck from large, oblong, bipolar or one-axis cores, perhaps in series, as described by Tixier, Inizan and Roche (1980). If so, these techniques link Bezez B (culturally?) with assemblages to the south and east in the Levant, for example Abu Sif and Hummal; these links are discussed later. A group of larger flakes, some desilicified and some in Nummulitic cherty flint is reminiscent of some Level C types.
This concludes the description of the amalgamated material from the layers of Level B. Analysis of the assemblages follows.

ANALYSIS OF THE LEVEL B ASSEMBLAGES

The analyses were done in the same way as were those for Level C, and the following brief account is supported by a set of tables and diagrams of the usual kind (Figs.B.8-B.10, Tables B.8-B.11).

CUMULATIVE DIAGRAMS

Doubts as to the value of this method were expressed in the previous chapter, but its use is more appropriate here, since we are dealing with Mousterian flake industries not unlike those of France. The diagrams follow the Bordes system except that categories 45-50 were included, this has not added more than c. 3% to any one layer's total.

Figs.B.9 and B.10 show between them the real percentages for six layers; two of these (M147 and M155) have poor samples, but are

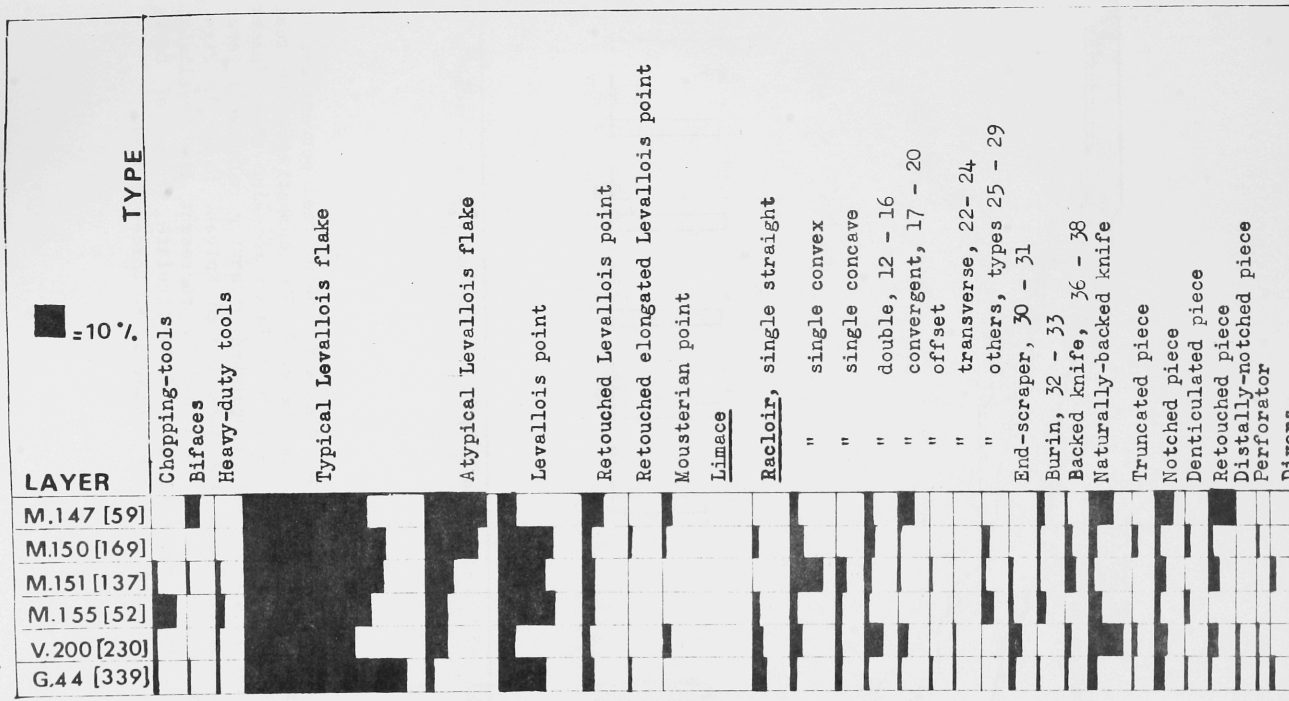


Fig.B.8: Histograms showing real percentages of tool-types in six layers of Level B. Compare with Fig.C.20 in Section I.

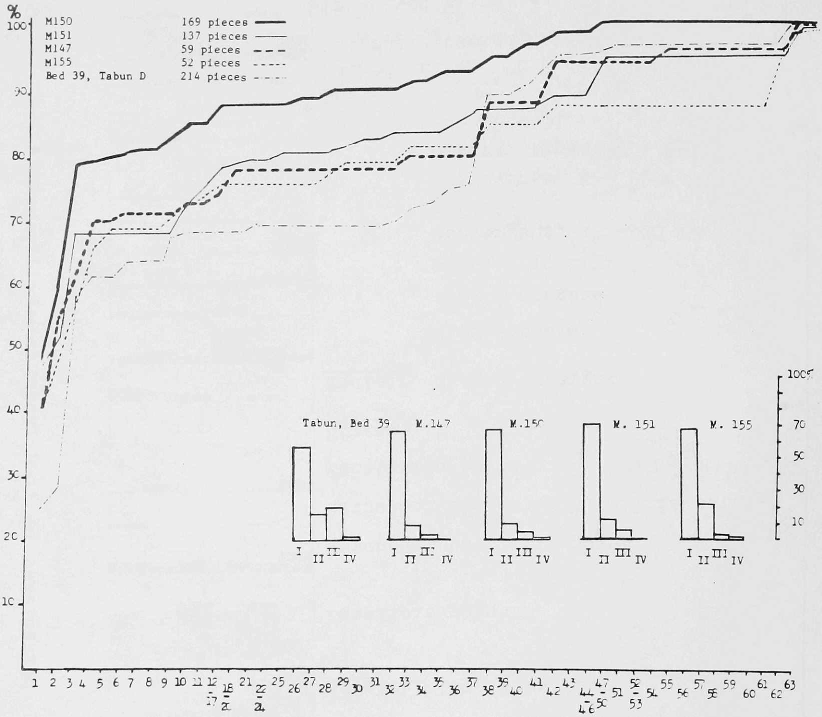


Fig.B.9: Cumulative frequency diagrams showing real percentages of four layers in Trench M, Bezez Level B. For comparison, the real percentages of Bed 39, in Level D at Tabun are also shown (after Jelinek, 1975); Bed 39 is distinguished by having relatively fewer Typical Levallois Flakes and more Backed Knives. N.B.: In Figs. B.9-11 the symbols I, II, III and IV represent the Levallois, Mousterian, Upper Palaeolithic and Denticulate groups of tools respectively, according to the system of F. Bordes (1955).

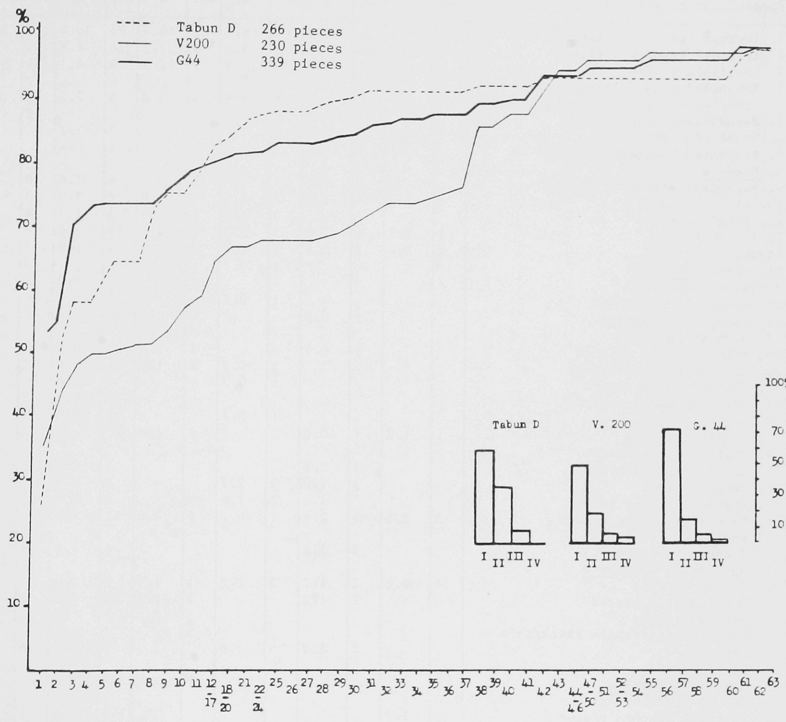


Fig.B.10: Cumulative frequency diagrams showing real percentages of two layers in Level B and of Level D at Tabun (the latter after Skinner, 1965, Fig.10, p.76). Symbols I-IV: see Fig.B.9.

Real tool list Bordes' number and Type	Layers	M147		M150		M151		M155		V200		G44	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Typical Levallois flakes		24	40.7	80	47.3	64	46.7	21	40.4	83	36.0	179	52.8
2. Atypical Levallois flakes		8	13.6	20	11.8	8	5.8	4	7.7	18	7.8	10	2.9
3. Levallois points		4	6.8	33	19.5	23	16.8	9	17.3	10	4.3	51	15.0
4. Retouched Levallois points and re-touched elongated Levallois points		5	8.5	2	1.2	5	3.6	2	3.8	5	2.2	9	2.7
5. Pseudo-Levallois points				1	0.6							2	0.6
6. Mousterian points		1	1.7	1	0.6					5	2.2		
7. Elongated Mousterian points				1	0.6					1	0.4		
8. Limaces													
9. Racloirs: single straight				2	1.2			1	1.9	4	1.8	8	2.4
10. single convex		1	1.7	4	2.4	7	5.1	1	1.9	9	3.9	8	2.4
11. single concave						3	2.2	1	1.9	3	1.3	4	1.2
12-17. double		1	1.7	5	3.0	3	2.2	1	1.9	13	5.7	4	1.2
18-20. convergent		2	3.4	1	0.6	1	0.7			4	1.8	3	0.9
21. offset (déjeté)						1	0.7					3	0.9
22-24. transverse										2	0.9	1	0.3
25. inversely retouched						1	0.7			2	0.9	4	1.2
26. abruptly retouched				1	0.6							1	0.3
27. with thinned back													
28. with bifacial retouch				1	0.6			1	1.9	1	0.4	1	0.3
29. with alternate retouch						1	0.7	1	1.9	1	0.4	1	0.3
30. Typical end-scrapers						1	0.7			4	1.8	1	0.3
31. Atypical end-scrapers										3	1.3	5	1.5
32. Typical burins						1	0.7			4	1.8	2	0.6
33. Atypical burins		1	1.7	1	0.6			1	1.9			2	0.6
34. Typical perforators													
35. Atypical perforators				1	0.6					1	0.4	1	0.3
36. Backed knives				3	1.8	3	2.2			2	0.9		
37. Atypical backed knives						2	1.5			2	0.9	2	0.6
38. Naturally backed knives		5	8.5	4	2.4	1	0.7	2	3.8	22	9.6	7	2.1
39. Raclettes													
40. Truncated pieces				2	1.2					4	1.8	3	0.9
41. Mousterian tranchets													
42. Notched pieces		4	6.8	2	1.2	3	2.2	1	1.9	7	3.0	11	3.2
43. Denticulated pieces				2	1.2			1	1.9	10	4.3	2	0.6
44. Becs burinants													
45-50. Abrupt/alternate thick/thin retouch				2	1.2	5	3.6			5	2.2	6	1.8
51. Tayac points													
52. Notched triangles													
53. Pseudo-microburins													
54. Distally-notched pieces		1	1.7							2	0.9	1	0.3
55. Cleavers													
56. Rabots												1	0.3
57-58. Tanged pieces													
59. Choppers													
60. Inverse choppers													
61. Chopping-tools						1	0.7	4	7.7	1	0.4	2	0.6
62. Divers		2	3.4			3	2.2	1	1.9	2	0.9	4	1.2
63. Foliate pieces													
Real tool totals and percentages		59	100.2	169	100.2	137	99.7	52	99.7	230	100.2	339	100.3

Table B.8: Inventory and real percentages of certain tool-types in Level B, rearranged into the order used in cumulative diagrams by F. Bordes.

Essential tool list Bordes' number and Type	Layers M147 No.	M147 %	M150 No.	M150 %	M151 No.	M151 %	M155 No.	M155 %	V200 No.	V200 %	G44 No.	G44 %
4. Retouched Levallois points and flakes	5	21.7	2	5.9	5	13.5	2	11.1	5	4.4	9	9.7
5. Pseudo-Levallois points			1	2.9							2	2.1
6. Mousterian points	1	4.3	1	2.9					5	4.4		
7. Elongated Mousterian points			1	2.9					1	0.9		
8. Limaces												
9. Racloirs: single straight*			2	5.9			1	5.6	4	3.5	8	8.6
10. single convex*	1	4.3	4	11.8	7	18.9	1	5.6	9	7.9	8	8.6
11. single concave*					3	8.1	1	5.6	3	2.6	4	4.3
12-17. double	1	4.3	5	14.7	3	8.1	1	5.6	13	11.4	4	4.3
18-20. convergent	2	8.7	1	2.9	1	2.7			4	3.5	3	3.2
21. offset (déjeté)					1	2.7					3	3.2
22-24. transverse									2	1.8	1	1.1
25. inversely retouched					1	2.7			2	1.8	4	4.3
26. abruptly retouched			1	2.9							1	1.1
27. with thinned back												
28. with bifacial retouch			1	2.9			1	5.6	1	0.9	1	1.1
29. with alternate retouch					1	2.7	1	5.6	1	0.9	1	1.1
30. Typical end-scrapers									4	3.5	1	1.1
31. Atypical end-scrapers					1	2.7	1	5.6	3	2.6	5	5.4
32. Typical burins					1	2.7			4	3.5	2	2.1
33. Atypical burins	1	4.3	1	2.9							2	2.1
34. Typical perforators												
35. Atypical perforators			1	2.9					1	0.9	1	1.1
36. Backed knives			3	8.8	3	8.1			2	1.8		
37. Atypical backed knives					2	5.4			2	1.8	2	2.1
38. Naturally backed knives	5	21.8	4	11.8	1	2.7	2	11.1	22	19.3	7	7.5
39. Raclettes												
40. Truncated pieces			2	5.9					4	3.5	3	3.2
41. Mousterian tranchets												
42. Notched pieces	4	17.4	2	5.9	3	8.1	1	5.6	7	6.1	11	11.8
43. Denticulated pieces			2	5.9			1	5.6	10	8.8	2	2.1
44. Becs burinants												
45-50.												
51. Tayac points												
52. Notched triangles												
53. Pseudo-microburins												
54. Distally-notched pieces	1	4.3							2	1.8	1	1.1
55. Cleavers												
56. Rabots											1	1.1
57-58. Tanged pieces												
59. Choppers												
60. Inverse choppers												
61. Chopping-tools					1	2.7	4	22.2	1	0.9	2	2.1
62. Divers	2	8.7			3	8.1	1	5.6	2	1.8	4	4.3
63. Foliate pieces												
Essential tool totals and percentages	23	99.8	34	99.8	37	99.9	18	100.4	112	100.3	93	99.8

* - including fragments.

Table B.9: Inventory and essential percentages of tools in Level B; after the order of Bordes (1955), except that categories 45-50 are excluded and heavy-duty tools are put in category 62.

Index	IL Levallois Index			IFs Restricted faceting index			IFl Enlarged faceting index			ILam Blade index		
Layer	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%
M147	49	64	76.6	31	64	48.4	36	64	56.2	13	64	20.3
M150	156	235	66.4	127	235	54.0	134	235	57.0	47	235	20.0
M151	117	169	69.2	77	169	45.6	92	169	54.4	50	169	29.6
M155	45	63	71.4	33	63	52.4	37	63	58.7	13	63	20.6
V200	194	289	67.1	138	289	47.8	158	289	54.7	95	289	32.9
G44 and D/G44	286	404	70.8	216	404	53.5	243	404	60.1	124	404	30.7

Table B.10: Technical indices of six layers in Level B. M155 has been 'enriched' to improve the sample by adding 6 fragments.

Column	1			2			3			4			5			6			7			8		
Index	Real ILTy & I			Real IR			Essential IR			Essential II			Essential III			Essential IV			Real IHD			Essential IAu		
Bordes' Type numbers	1-4			9-29			9-29			6-29			30-37			43			Bifaces and 56, 59-62			36 and 37		
Layers	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%	no.	no. in class	%
M147	41	59	69.5	4	59	6.8	4	23	17.4	5	23	21.7	1	23	4.3	-	-	-	2	59	3.4	-	-	-
M150	135	169	79.9	14	169	8.3	14	34	41.1	17	34	50.0	5	34	14.7	2	34	5.9	-	-	-	3	34	8.8
M151	100	137	73.0	17	137	12.4	17	37	45.9	17	37	45.9	7	37	18.9	-	-	-	2	137	1.5	5	37	13.5
M155	36	52	69.2	6	52	11.5	6	18	33.3	6	18	33.3	2	18	11.1	1	18	5.6	5	52	9.6	-	-	-
V200	116	230	50.4	39	230	16.9	39	112	34.8	45	112	40.2	16	112	14.3	10	112	8.9	1	230	0.4	4	112	3.6
G44 and D/G44	249	339	73.4	38	339	11.2	38	93	40.9	40	93	43.0	13	93	14.0	2	93	2.1	6	399	1.5	2	93	2.1

Table B.11: Bezez, Level B: Typological indices for six layers in Level B. After the method of F. Bordes, except that bifaces and biface-fragments have been added to the 'essential' totals, 2 in M147, 1 in M151, and 3 in G44-D/G44; see column 7, the Heavy Duty index. N.B. In the Bordes system, the 'essential' list excludes all the Levallois pieces (except Retouched Levallois points), as well as the variously retouched groups (nos.45-50); see also p.000

included to demonstrate the evident similarity, poor sample notwithstanding, of all the layers in Trench M. It can be seen by the small tool-group histograms in Fig.B.9 that, although M151 pairs best with M155 and M146 with M150, the four layers are very similar. Fig.B.10 shows that G44 is closely comparable to the layers in M, and that V200 differs merely by having a lower number of Levallois pieces, which gives it correspondingly higher percentages for racloirs and other tools. In Fig.B.11 will be found the essential percentages for the only two layers which offered good statistical samples of retouched tools: V200 and G44. The diagram for M151, the largest essential total produced in Trench M, is included in dotted line, to give an idea of the basic similarities between the layers. Once again the only discernable difference is that V200 has higher percentages of retouched tools and naturally-backed knives. Tables B.8 and B.9 give the figures upon which the diagrams are based. The cumulative diagrams do not indicate any significant differences between the layers.

THE INDICES

TECHNICAL

Table B.10 gives the technical indices of six layers; these may be examined in conjunction with Fig.B.4. The figures speak for themselves, showing a remarkable similarity between the layers, and from them we infer that the technical traditions are the same in all layers of Level B.

TYPOLOGICAL

The typological indices were compared, first using real, then essential, percentages; the results of the comparisons, many of which are shown on Table B.11, may be listed as follows:

a) The retouched Levallois tools, few in each layer, showed a range of variation of 16% between the layers; the indices for M147 and M155 were probably affected by the small number in the sample. Without these two percentages, the range is 4.5 - 13.5%, or 'the same' within one standard deviation.

b) In contrast, the real ILTy showed a uniformly high group of indices, with that for V200 differing slightly from that of the others (Table B.11, column 1).

c) The real racloir indices (column 2) showed some variation between low limits, in a range of 10.0%; M147 and M150 seemed to pair up (with the lowest indices) while M151 and M155 joined V200 and G44 (in having smaller and higher indices in a 5% range, well within the margin of error at one standard deviation).

d) On the other hand the essential racloir indices (column 3) were fairly similar for all layers except M147 - again perhaps due to the poor sample in this layer. The same could be said of the essential Mousterian tools index (column 4) for M147, the real index of which is not dissimilar to those of the other layers.

e) As to the Upper Palaeolithic group, the indices showed low numbers, closely similar, throughout (Table B.11, column 5). The two layers with poor samples showed possible distortion, while all

four layers with good samples showed similar indices, three of them the same (c. 14%).

f) Denticulates tended to occur only in layers with good samples (column 6).

g) The indices for heavy-duty tools (column 7) were variable, with none in M151 and a relatively high index for M155 - again, perhaps due to distortion.

h) The backed knife index (column 8) varied within a range of 11%, except for two layers which had no indices.

In sum, the typology is closely similar in all the layers, the differences being slight and in some cases perhaps due to distortion caused by poor samples.

SPATIAL RELATIONSHIPS

Some chronological relationships exist in Trench M: M147 and M150 seem to form one layer, M147 being that part found in the east end of the trench and M150 being that part found in the centre of the trench. They overlie another pair, one at the east end (M155) and another in the centre of the trench (M151). The uppermost pair obviously occurred later in time, and to find out what developments could be observed, the indices of the four layers were compared in blocks, first laterally (M147 with M150) and then vertically (M147 with M155) at the east end, and similarly for the west end and centre (M150 with M151, and M151 with M155). The results of this exercise were inconclusive; no significant indication of change appeared to exist laterally or vertically, especially as concerns the technology; however, the following slight differences were noted:

1) There is a slight decrease upwards in racloirs, both at the east end and in the centre, and the same may be said for Group II (Mousterian) types.

2) Retouched Levallois tools have similar percentages at both ends of the trench in the lower level, but there is a greater concentration of them in the upper level at the east end.

3) There is a similar concentration of 'Upper Palaeolithic' (Group III) types on both levels at the centre of the trench, unless the figure is an effect of distortion.

4) There is a similar concentration of pieces with faceted butts in M155, i.e. the lower level at the east end of the trench.

5) Backed knives occur only at the centre of the trench, in both the upper and lower levels; they are absent in both levels at the east end.

With the proviso, therefore, that there could be a slight racloir decrease chronologically, one could say that the same facies is represented in the layers of M, such differences as occur being statistically not significant.

Turning to the other layers it is to be noted that:

1) Since V200 is stratigraphically isolated (i.e. not over- or underlying any other assemblage), we do not know how it relates chronologically to the others; however the similarities seen in the material to that of the other layers suggests that V200 should belong with the rest of Level B. There are reasons for thinking that it might be a continuation of the layers of M.

2) Layer G44 is also unconnected to M, and indeed could represent a later occupation, since it overlies a sterile layer rather than the Acheuleo-Yabrudian. Yet, from the data we have just been considering, it could hardly be said to represent a different facies. If anything, there would be a slight suggestion in the racloir index that G44 relates more to the lower M layers.

In sum, the whole comparative analysis confirms the evaluation made by the excavators in 1964, which was that the layers represented only one Levalloiso-Mousterian facies. The few observable differences between individual layers, such as a concentration of one tool-type in one area, are only to be expected in a cave as large as Bezez, and can readily be attributed to the existence of specific activity zones.

THE DENSITY OF FLINT ARTIFACTS IN THE CAVE AREA

Up to a point, statistical analysis based on amalgamated totals has been avoided, given the discontinuous nature of the layers. It is now useful to combine the layer totals in order to find out what proportion of artifacts were used in various areas of the cave. To this end the layers of Trench M were combined as one block, to give a total of 684 pieces. The small sample from Trench D (see Appendix C) is also considered.

OVERALL DENSITY

Artifacts are most dense well into the interior and towards the back of the cave. In contrast to Level C, more came out of Trench M (46.2%) than came from the larger and thicker exposure of Trench G (30.0%). If the pieces from the disturbed levels M148-9 were added, the total would be greater still by 260 pieces. Only 0.9% came from the sill area of Trench D, which is a small total even when loss of deposit through erosion or slumping is taken into account.

About a quarter of the total (22.7%) came from V200 at the rear of the cave. Attention is drawn to the quite extraordinary number of artifacts (not counted in the above percentages) which were found in the inner recesses of 'Victoria Cave' - 63% of the full total of Levalloiso-Mousterian material found, 5,809 artifacts (see Table B.1); most of this was evidently primarily deposited in the recess, as the breccias which have survived the disturbances testify.

TOOL/WASTE RATIO

Unretouched flakes form 71% of Level B material. This is comparable to the 80.3% quoted by Jelinek (1975) for Bed 39 (Unit IV) in Tabun D. If we count the unretouched Levallois flakes as

tools, only 44% consists of non-Levallois material (flakes and cores). The material is distributed as follows:

CORES

80% of the total number of cores were found in the rear parts of the cave (81 in M, 41 in V, only 31 in G).

UNRETOUCHED FLAKES

If we consider individual tools, no layer was substantially richer than another (the range being 16-23%); however, when we combine the totals, the figure for M comfortably exceeds the combined totals for V, G and D (159 as against 141 pieces).

ALL UNRETOUCHED ARTIFACTS (including those regarded as tools - Levallois flakes and naturally-backed knives)

Of the total of 1,013, the density was greatest in M (490) and G (321) with 197 in V and 5 in D.

TOOL DISTRIBUTION

Tools were most dense in M (43.9% of all artifacts) and G (33.0%) but there were 22.5% in V200. However, the figures for the individual layers are quite different: 78.8% of the 14 pieces in D are tools, which is similar to 76.0% in G (with a much larger total). In M and V the percentages are 65.0 and 68.2 respectively.

The racloirs are distributed a little differently - similar numbers in M (41, i.e. 36.6%), V (39, i.e. 34.8%) and G (38, i.e. 40.9%), but only 6 (c. 54%) in D. There is a high density of unretouched Levallois pieces in M (319) and G (240) and a reduced number (111) in V. M also has more backed knives and more naturally-backed knives than the combined numbers from the other layers.

These results could have been affected by many factors: if they are taken at face value, however, it appears that a larger area of the cave (or at least a different area) was occupied during the Level B phase than during the period of Level C: the inner parts, rather than those nearer the mouth, were more densely used. There is some evidence for zones of use at Qafzeh (Vandermeersch, 1972) and Kebara (Schick and Stekelis, 1977).

SUMMARY OF LEVEL B

The layers of Level B all seem to represent one form of Levantine Mousterian industry, a Levalloiso-Mousterian of Levallois facies, with a tendency toward blade-like and triangular forms made by a unidirectional core-preparation technique. Traces of a 'Yabrudian tradition' can perhaps be seen in the biface and offset racloir group.

The technical distinguishing marks are: the use of unidirectionally-prepared (rather than radially-prepared) cores; the production of blades, narrow parallel-sided flakes and elongated triangular points; the presence of a heavy non-Levallois component, consisting of trimming-blades and of flakes with large

plain or simply-faceted butts; these accompany a similar non-Levallois series with finely-faceted butts. The facies appears now to be of Levallois débitage in the sense of Bordes. If we are to judge from the original composition of G44, it was clearly Levallois even before sorting and the discarding of débris, as Appendix D shows. We may infer a similar composition in the other layers.

Typologically, only a moderate number of retouched tools are present, and these are mostly racloirs. Burins and backed knives form small but distinct components, but end-scrapers are virtually absent. Heavy-duty tools are rare, but include some poor bifaces and Quina racloirs - the 'Yabrudian element' of the excavators. Notches and denticulates occur in fair number. The emphasis of the industry is on unretouched Levallois pieces, many being triangular points and blades.

THE CHRONOLOGICAL PLACE OF LEVEL B

Industries with generally similar traits occur in many sites in the Levant. As the sequence at the important site of Tabun shows, such a facies occurs at the start of the Levalloiso-Mousterian era; however, some of the same features occur at the end - in Tabun B, while they are absent from the intervening thick deposits in Tabun C. In order, therefore, to place Bezez B chronologically within the long period represented by Tabun D, C and B, we must compare not just the typology of other Levant sites but also the relative stratigraphic position of the Tabun facies as against that of other industries.

At Bezez, Level B occurs on top of the Acheuleo-Yabrudian layers, from which in two exposures (D and G) it is separated by a sterile layer. The hanging breccias show that Mousterian layers once continued upward for another 2½ - 3m., so that the total depth of the Mousterian layers might once have been as much as 4m. At Tabun, Level D is in a similar stratigraphic position in relation, not only to the Acheuleo-Yabrudian below it but also to the further Levalloiso-Mousterian deposits above it, from which it is separated by a similar (and possibly contemporary) gap in the depositional sequence; at Tabun this is placed between D and C, when there was a major subsidence under the interior chamber (Jelinek, 1981, Fig.3, p.273). Since, as we shall see below, Tabun D is typologically similar to Bezez B, the inference is that it and Tabun D each represents the first part of a long Levalloiso-Mousterian sequence passing through several facies. If so, it follows that Bezez B could hardly be a late Levalloiso-Mousterian facies, provided that there is no major unconformity between Levels C and B. For the moment, the geological evidence indicates that these two levels did indeed occur close together in time (just as did Tabun Ea and D, without soil change), i.e. before the Enfean beach sand had become consolidated (see Cornwall, supra, pp.69-74). It was also the opinion of Professor Garrod, based on her long familiarity with, and experience of, Levantine archaeological material, that Bezez B was an early form of Levalloiso-Mousterian (pers.comm. 1968).

REGIONAL COMPARISONS

Levalloiso-Mousterian sites are very numerous in the Levant and several workers have attempted to group the assemblages into facies (e.g. Skinner, 1965; Perrot, 1968). In recent years the recognition has gained ground that the observed variability is due to chronological as well as regional factors, at the expense of the previously popular idea, which was that the variability was comparable to that seen at certain French Middle Palaeolithic sites and interpreted as successive occupations by different ethnographic groups, having little to do with chronological development or regional factors. In the Middle East, at least, each new discovery now tends to confirm the existence of regional traditions of flint-knapping; the boundaries of each are not always as first envisaged, and they also seem to shift through time (Copeland, 1981a). An example has been recognised at Tabun by Jelinek (the 'Mugharan Tradition'; 1981) based in part on the finding of a transitional layer between the Yabrudian and the Levalloisian, low down in D (or in Unit X), in an area of the cave not reached by the Garrod excavation. The idea of such a transition has been reinforced by finds with similar implications at el Koum (Hummal Ia, which seems to separate the Yabrudian from the Mousterian of Level II-IV). A different 'province' seems to be recognisable in North Syria where the knapping-traditions are characterised by the production of broad Levallois flakes; this seems to have begun slightly before or at the same time as the more blade-like facies which followed the Yabrudian (Copeland and Hours, 1981).

For reasons of brevity we must confine our discussion to assemblages which correspond typologically to Bezez C. These show a remarkable similarity in their relative stratigraphy: as at Bezez, whenever a Yabrudian is followed by a Levalloiso-Mousterian, the latter is of the elongated facies, examples being Tabun D; Yabrud I, 10; Hummal II-IV; Zuttiyeh, and perhaps also Jerf Ajla, Ain Juwal at El-Koum and Abu Sif C, although the underlying industries might be Acheulean in the three last named sites. The occurrence of elongated Levalloiso-Mousterian <u>without</u> underlying Yabrudian has been reported from the southern Levant (e.g. Rosh Ein Mor; Marks, 1975); it is classed as an Early Mousterian and the date suggested for its start is between 80,000 and 50,000 years b.p. (Marks, 1981a, p.289).

If, as we propose, Bezez B belongs with this group, the suggestion should be reinforced by a closer examination of the material. We will begin with Tabun, the closest to Bezez.

TABUN D AND TABUN UNITS IX-II

The Mousterian part of the Tabun sequence, 11m. thick in the areas excavated by Garrod, has recently turned out to have a more complex stratigraphy than was envisaged in the preliminary reports of the second excavator (Jelinek, 1981). Although the latter can identify the layers excavated by him which were adjacent to Garrod's Layer D, it appears that certain portions of these have slumped into an unsuspected swallow-hole in the interior chamber, an area barely reached by Garrod's excavation. This makes for difficulties when attempting to correlate the typology of 'Tabun D'

with 'Units IX-II'. Since Jelinek regards the Tabun D deposits as having been deposited prior to the above-mentioned collapse, and the artifact inventories of Units VIII-II as 'to some degree mixed', it seems best to confine our discussion here to material published as Tabun D by Garrod, using other data when applicable. Museum collections show that, from the technical viewpoint, Tabun D contained double-ended blade-cores and other blade core types, just as did Bezez B. Levallois flakes produced by the classic (or 'one-preparation-one-flake') Levallois methods were in a minority (Skinner, 1965), a characteristic seen also in Bezez B. Tabun D artifacts have tendencies toward elongated and laminar forms, as all the authors agree, although exact percentages are hard to establish (as is illustrated on our Table B.12). Some light has recently been thrown on the matter by Jelinek (see his Table VI, 1981, p.275). The Levallois index is also difficult to compute, due to the differences in methods of classification of Levallois blades (for Jelinek, those with plain butts are counted as non-Levallois; 1975, p.304). However, the percentages shown in Table B.12 are very close to those for Bezez B.

With the typology, we are on somewhat firmer ground. The biface indices are low, 0.49% in Unit IX, 3.1% in Bed 39 (Unit IV), 2.1% in Tabun D, and 2.7% in Bezez B. Tabun D was far richer in racloirs than the areas excavated by Jelinek; Skinner quotes 66% on a Tabun D sample of 266 pieces, while Bed 39 had 19%. Most of the Bezez B layers have racloir indices half-way between these figures. On the other hand, the burins of Bed 39 (3.1%) compare with the essential burin index for Bezez B (4%). The burins of Tabun D were said to be 'better-made and more typical than those in the overlying layers' (Skinner, 1965, p.77). Skinner's Upper Palaeolithic index for Tabun D is almost the same as that for the Bezez B layers (12.8% and around 14% respectively). As to the Levallois element, the ILTy for Tabun D at 59.6 (quoted by Skinner) is close to that for some of the Bezez B layers, which range from 50 to 80, and almost the same as that for Bed 39 at 60.3 However, judging by the proportions of Levallois points, blades and flakes quoted by Jelinek for Unit IX, Bezez B seems to differ in having more flakes than points or blades - perhaps partly due, as already mentioned, to different sorting methods.

To sum up, it would probably be fair to say that the similarities between the facies of Tabun D and Bezez B are sufficient to distinguish both from the succeeding layer, C, at Tabun in which broad oval flakes and radial core-preparation were characteristic (compare the statistics quoted by Jelinek, 1981, Table VI).

ABU SIF, LAYERS C AND B

This small site was excavated by Neuville (1951). The 'Micoquian' material at the base in Layer E (Acheuleo-Yabrudian?) was partially separated from the overlying Levalloiso-Mousterian in Layers C and B by a sterile layer, D.

Layer C has an assemblage in which elongated and triangular forms predominate. Jelinek (1981, Table XVI) calculates that 63% of the Levallois flakes and blades are pointed. Almost all the tools

Sites / Percentages	REAL							ESSENTIAL			Classifier and reference	Number in sample
	IL	IF1	IFs	ILam	ILTy	IR	IV	IR	III	IBif*		
Yabrud I, 10	63.5	74.0	**	3.7	89.0	5.6	-	50.0	0.6	0.6	Skinner, 1971	162
Yabrud I, 10	27.5	68.8	58.8	23.1	66.8	8.1	2.9	43.0	12.3	2.9	Bordes, 1955	610
Bezez M150	66.4	57.0	54.0	20.0	79.9	8.3	1.9	41.1	14.7	-		281
Bezez V200	67.1	54.7	47.8	32.9	50.4	16.9	4.3	34.8	14.3	-		335
Bezez G44	70.8	60.1	53.5	30.7	73.4	11.2	0.9	40.9	14.0	3.1		444
Tabun D, Bed 39	53.3	64.6	54.5	57.2	60.3	5.1	1.4	19.0	31.7	3.1	Jelinek, 1975	214
Tabun D (tools)	67.4	79.6	**	14.2	59.6	18.4	-	66.9	12.8	-	Skinner, 1971	266

Table B.12: Comparison of some indices for 3 layers in Level B with those of Yabrud Shelter I, level 10 and with those of Tabun D (each computed by two different classifiers): after Bordes (1955, Table I), Jelinek (1975) and Skinner (1971, pp.123 and 76); the latter used Garrod's material from Tabun D. * - essential total + bifaces; ** - not given by author.

(which include types such as backed knives, backed racloirs, convergent racloirs on elongated points, Mousterian points and retouched Levallois points) are made on generally heavy and long or triangular Levallois blanks which characteristically curve off to left or right at the tip. Other tools include burins, described as comparable to the Acheulean burins from Qatafa (ibid.). A large non-Levallois blade and point component, not mentioned by Neuville, has been noted by Skinner (1965, p.154). Of the numerous faceted butts in C, some are of chapeau-de-gendarme type.

Judging from an examination of the material in the Institut de Paléontologie Humaine in Paris, Layer B seems to be slightly more evolved and differs from C in having no backed knives. From both levels, 'classic' Levallois broad oval flakes and multiconvergent preparation flakes are absent, just as in Tabun D and Bezez B.

The Abu Sif material could represent a concentration of specialised tools. The heavy blade blanks and other features could however be seen as links with the Acheuleo-Yabrudian and the Amudian, and both Neuville and Garrod regarded it as representing an early Levalloiso-Mousterian following on from the Yabrudian according to the Tabun model. As mentioned already in Section I of this chapter, an assemblage which appears to be ancestral to the Abu Sif facies was found at Hummal in level Ia, while higher layers, Hummal II-IV, seem closely comparable to Abu Sif, and hence to Tabun D and Bezez B.

YABRUD, SHELTER I, LEVELS 10 - 8

Levels 10-8 are the earliest of the Levalloiso-Mousterian layers at this site, and overlie the Yabrudian sequence as discussed in Section I. These three levels contain material which would be completely at home if it had occurred in Bezez B, such as the prevalent elongated and parallel-sided Levallois pieces from all three levels, the denticulated group of points and blades from level 9 and the heavy racloirs and rather scarce bifaces in 10 and 8. Besides a bifacial element of 1.22%, level 8 has some excellent large triangular points made into convergent racloirs, as well as the lame aurignacienne types (noted also by Garrod at Tabun D) and inverse racloirs and burins (see Rust, 1950, Tafeln 54 and 56).

To take these levels in turn, we should first note the description of level 10 by Bordes, which, following Rust, he had called 'Acheuléo-Moustérien ancien':

> ...le débitage est nettement Levallois,... l'indice laminaire devient élevé... l'indice Levallois typologique très fort (66,8) le classe parmi les facies 'levalloisien'... Cette industrie se characterise par de grandes lames Levallois allongées, souvent retaillées, en pointes moustériennes allongées, rapellant le niveau C d'Abou-Sif.
>
> (1955, p.492)

Besides the stylistic and technical similarities noted above, the cumulative diagram (our Fig.B.11) demonstrates some typological similarities. This curve may have been affected by the rather low number of essential tools (60, according to Bordes, 1958-61). This

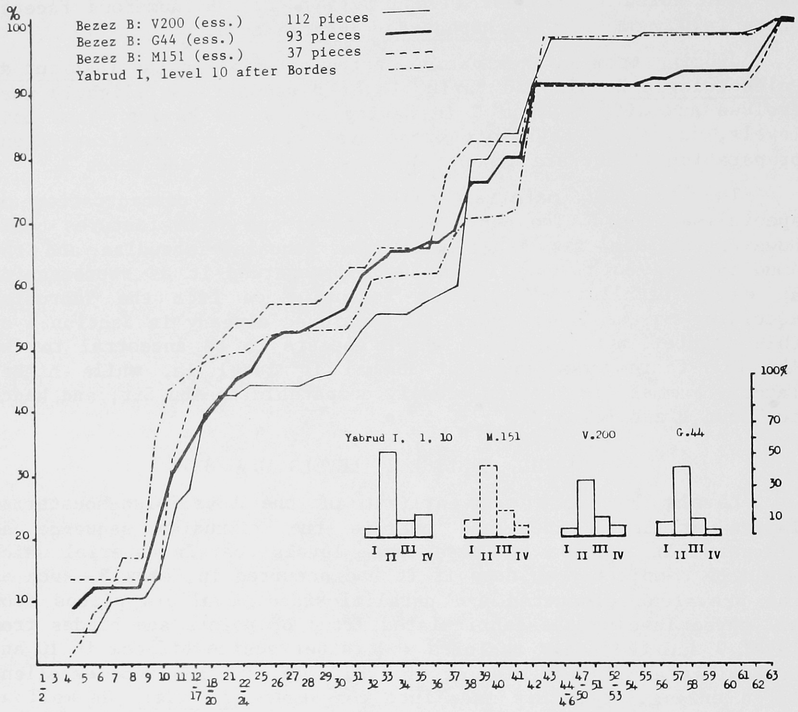


Fig.B.11: Cumulative frequency diagrams showing essential percentages for three layers in Level B, and for level 10 at Yabrud Shelter I (the latter after F. Bordes, 1955, Fig.3, p.493). For symbols I-IV, see Fig.B.9.

factor has also certainly been partly responsible for the very low Levallois Index for level 10 (27.5), the other factor being the presence of a large number of non-Levallois flakes. In contrast, the Levallois Typology Index is high, and the other indices, particularly the Racloir Index, are closely comparable to those at Bezez, as our Table B.12 shows (this Table also compares Tabun D indices with those of level 10).

Attention is drawn to Table B.12, which shows how different results can accrue when technological indices such as the IL and ILam are computed on the tools only (266 pieces, real, in the case of Skinner) instead of on the total assemblage (600 pieces in the case of Bordes).

Unfortunately, L. and S. Binford did not include level 10 in their factor analysis sample (1966, p.243); however, they included it in their Fig.11 (ibid., p.284) where the frequency polygons show it to resemble levels 9-7.

Turning to the overlying level 9, the illustrations show the material to be stylistically similar to Bezez B, but typologically it differs in having many denticulates and even end-scrapers. Bordes (1955, p.494) suggests that this is either a result of 'Pre-Aurignacian influence' (from underlying levels 15 and 13) or else is due to a mixture of two thin layers. As we now know, such 'Upper Palaeolithic' types as end-scrapers occur both at Jerf Ajla and in the Negev Early Mousterian of Marks (1981, p.294). Although the Binfords did not fully study level 9 of Yabrud I, they have attributed traits of this sort in other levels to the presence of different tool-kits left together in the level (op.cit., pp.270 et seq.). Skinner (1965, p.164) took a parallel view, suggesting that if Yabrud I levels 10 and 9 had been excavated as one level instead of two, the results would have provided data which could be compared with material from other sites in the region. If such assemblages occur in Tabun, Jelinek may be able to isolate them.

Level 8 was interpreted by Bordes (with level 10) as representing an 'attenuated Ferrassie' facies. Rust considered it to be a culture derived from a blend of Yabrudian and Acheulean, while the Binfords concluded that it represented a combination of artifact groups utilised in two major activities: maintenance and secondary tool manufacture - and rather specialised hunting and butchering - taking place in a work-camp (1966, p.271).

As to the uppermost layers at Yabrud I, they contain triangular Levallois points, as does Tabun B, but in other respects do not greatly resemble Bezez B assemblages. For the moment, we regard levels 10-8 as being most comparable to Bezez B.

JERF AJLA, LEVELS YELLOW 2, WHITE, AND BROWN 2

The basal layer (Yellow 2) at this site contained an Acheuleo-Yabrudian-like component (Schroeder, 1966; 1969a; 1969b) and, once again, a Levalloiso-Mousterian facies, which appears to resemble that of Bezez B, occurs in close association with it in the same layer. However, it is not clear whether the Levallois element at the base belongs to the bifacial element or to the succeeding Mousterian phase; if the former were the case, the Yellow 2

assemblage might represent an Acheulean facies using Levallois *débitage*, somewhat like Yabrud shelter I, levels 18, 17 and 12 and other sites in north Syria; certainly the bifaces displayed in the Palmyra Museum are Acheulean in style rather than Acheuleo-Yabrudian. In any case, similar Levalloiso-Mousterian material occurred (without Acheuleo-Yabrudian elements) in the overlying layers Brown 2 and White. Attention is drawn to the size and heaviness of the blades, which are equal in number to the flakes, and also to the high number of burins in Brown 2 in contrast to their decrease in the overlying levels (Schroeder, *op.cit.*).

ZUTTIYEH

This Galilean cave, the findspot of the well known primitive Neanderthal skull (Turville-Petre, 1927), has recently been re-excavated and the opinion of Garrod (1962, p.234) that the material previously excavated by Turville-Petre in 1925 represented mixed Yabrudian and elongated Levalloiso-Mousterian material is confirmed (Gissis and Bar Yosef, 1974). The recent excavators succeeded in separating Levalloiso-Mousterian and Yabrudian layers, but not many artifacts were recovered. Basing his opinion on museum collections of the earlier material, Skinner (1964, p.29) regarded the Levalloiso-Mousterian element as consisting of elongated Levallois points, Mousterian points, knives and blades. If this is correct, we have here another instance of a Yabrudian phase followed by an elongated point facies of the Levalloiso-Mousterian. It could well be contemporary with Bezez B; there is a Uranium series date of 97,000 b.p. (Schwarcz *et al.*, in press), for a travertine between the Yabrudian and Mousterian layers.

HUMMAL LEVEL II

At this, the most recently found 'elongated Mousterian' site, the first appearance of the Levalloiso-Mousterian occurs in a sample of 320 artifacts picked from the section of a well cut through deposits of a spring-mound in the el-Koum Basin (Besançon *et al.*, 1981). The underlying Yabrudian layer, Ib and the 'Hummalian' in Ia have been mentioned earlier in this chapter, in the section devoted to Bezez Level C. Level II (found in two slightly different variants in 1982) resembles the Hummalian typologically, consisting of elongated Mousterian points, retouched blades and *racloirs*, but technically it is markedly more Levallois and more triangular, most of the butts being faceted. In this and other respects it correlated closely with Abu Sif C, especially in the presence of unretouched Levallois points, both elongated and normal-sized. Thus, even though far from the coast, it is linked to the first Levalloiso-Mousterian facies (also overlying Yabrudian) at Tabun D and Bezez B. An idea as to the date may be gained from a U/Th determination of 76,000 years b.p. from travertine below the Mousterian at Oum Qubeiba, another mound spring at el-Koum (G. Hennig, *pers.comm.*).

Together with Hummal Ia, where the ILam was high and the IL and IF low, layer II gives us intriguing hints as to the possible origins of the elongated form of Levalloiso-Mousterian: in an

industry of Levallois-like blades and points, contemporary with (or immediately succeeding) the Yabrudian.

The above discussion, largely confined to assemblages similar to Bezez B, could be expanded to cover many other facies, some of them (e.g. Naamé) contemporary but different; this subject will be touched on in the final chapter. Meanwhile, the placement of Bezez B at an early stage of the Levalloiso-Mousterian sequence in the Levant, while not precisely dated, is regarded as highly probable.

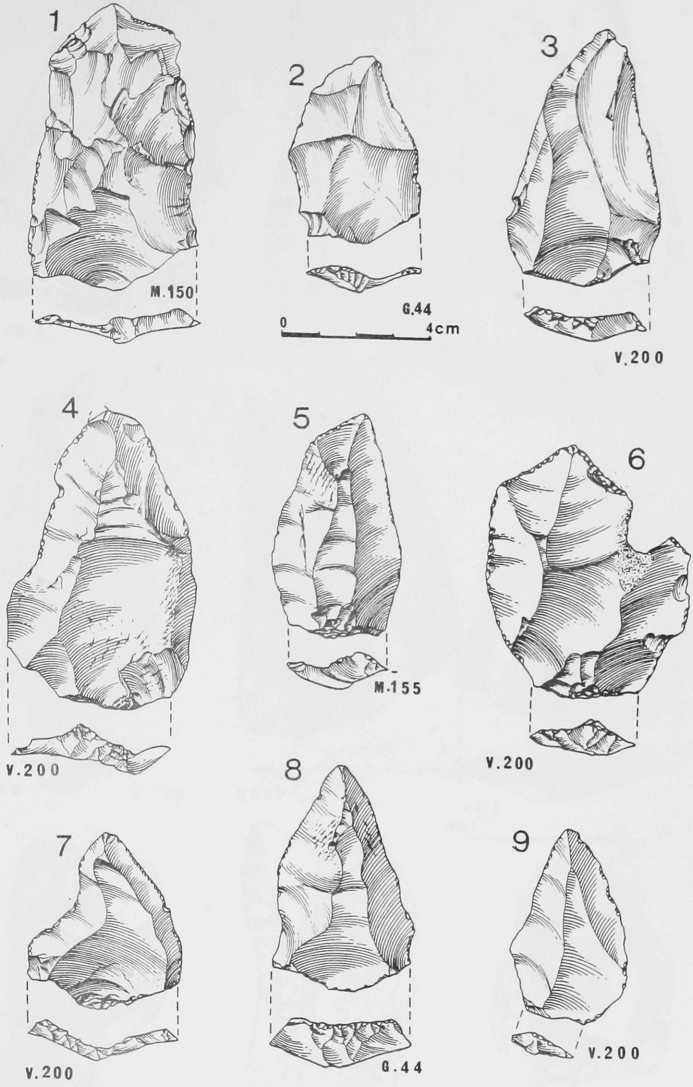


Plate B.1: 1, Typical Levallois flake with white patina, multiconvergent preparation. 2, Typical Levallois flake, multiconvergent preparation; matt buff flint. 3, Typical Levallois flake; buff chert. 4, Typical Levallois flake or sub-point; skewbald flint. 5, Levallois sub-triangular point, unidirectional preparation; white patina. 6, Atypical Levallois flake with slight distal retouch; brown shiny flint. 7, Levallois triangular point, chapeau-de-gendarme butt; white patina. 8, Triangular Levallois point, very thick butt; grey chert. 9, Triangular Levallois point, slightly off-centre butt; buff chert. The last three are unidirectionally prepared.

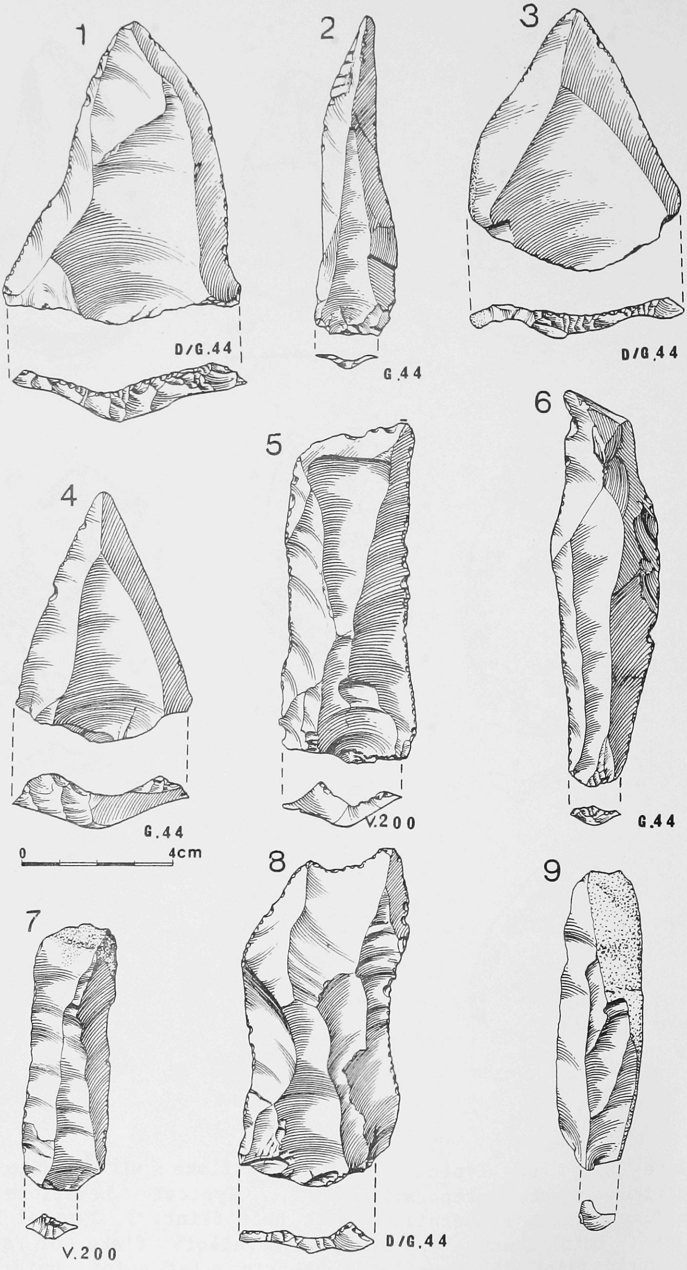


Plate B.2: 1, Levallois point; broad, straight butt; white patina. 2, Elongated Levallois point, atypical at tip, narrow butt; white patina. 3, Atypical Levallois point with cortex on one edge at base; beige flint. 4, Triangular Levallois point with thick butt; brown matt flint. 5, Levallois blade with slight lateral retouch; beige flint. 6, Atypical Levallois blade with traces of core-preparation at tip, which ends in a hinge-fracture. 7, Atypical Levallois blade with narrow butt. 8, Levallois blade, bipolar preparation; white patina. 9, Non-Levallois cortex-blade.

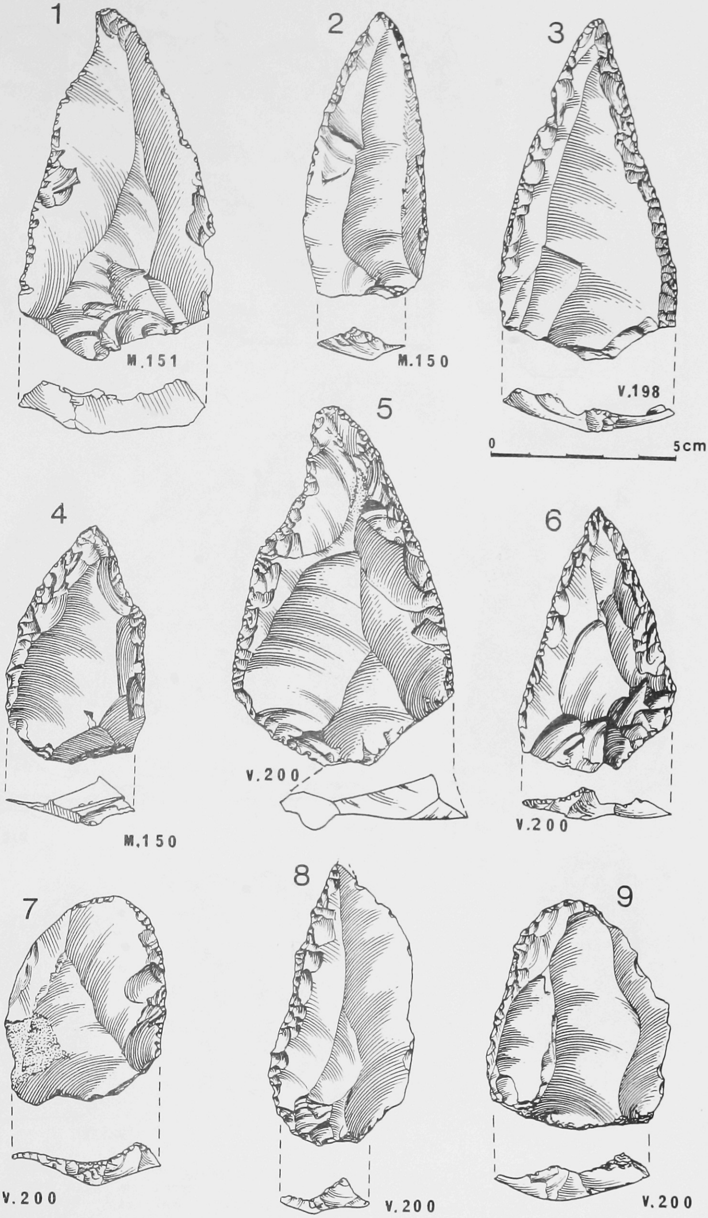


Plate B.3: 1, Retouched Levallois point on heavy, atypical point, Abu Sif type with tip curving to left; shiny cream flint. 2, Elongated Mousterian point on non-Levallois blade; semi-abrupt retouch at tip on one side, flatter bilateral retouch; brown matt flint. 3, Mousterian point on Abu Sif type blank; heavy semi-abrupt retouch on right edge, flatter retouch on left edge; beige chert, with double patina. Tip is very thin. 4, Convergent racloir or atypical Mousterian point, heavy asymmetrical butt; abruptly retouched to very sharp tip which is 0.7cm. thick, as is the body; honey-coloured chert. 5, Elongated Mousterian point, Abu Sif type, tip curving to left; the left edge is thin, with semi-abrupt retouch while the right edge has abrupt retouch; butt has extension, part of core edge, 4cm. long. Made on a non-Levallois flake; butt angle is 115°. 6, Mousterian point on a non-Levallois blade, c. 9cm. thick. Steep, resolved retouch on one edge, semi-abrupt on other edge. Tip is sharp and thin; butt has core-edge méplat. 7, Single convex racloir on atypical Levallois flake; 0.9cm. thick, white chert. 8, Single straight (slightly denticulated and sinuous-edged) racloir on a Levallois blade with tip slightly damaged; mixed abrupt and flat retouch tip to butt. 9, Single convex racloir, slightly irregular and denticulated edge from butt to over tip, other edge damaged; made on a non-Levallois [illegible]

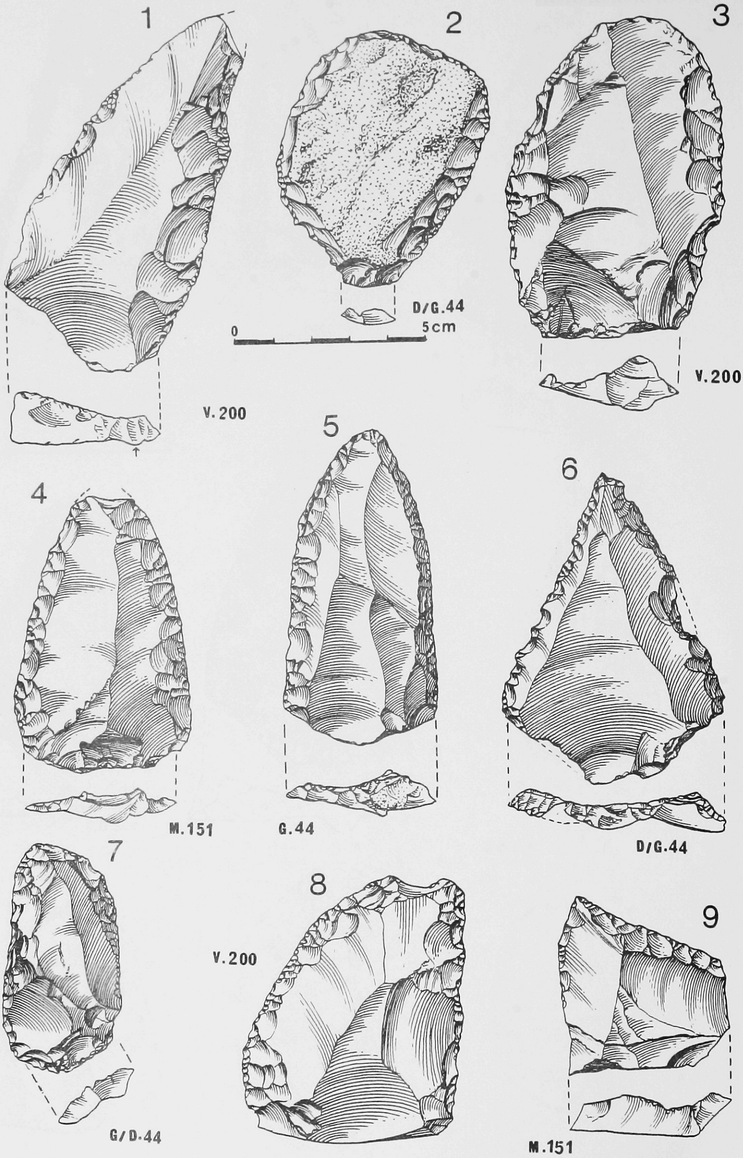


Plate B.4: 1, Double straight convex racloir on a large (pseudo-Levallois?) triangular flake of Abu Sif type; one edge heavily retouched (demi-Quina) with re-working near tip, other has alternate flat retouch; thick méplat on butt, shiny cream flint. 2, Double biconvex racloir; retouch almost all round a cortex-flake only 0.5cm. thick; grey flint. 3, Double biconvex racloir on a Levallois flake, thin at tip and thick (1.6cm.) at butt; denticulated appearance is due to breakage and re-working. 4, Double biconvex racloir; probably a convergent, on a broad-based point 0.8cm. thick, with tip broken off; semi-abrupt retouch; butt-angle is 115°. 5, Convergent biconvex racloir on an elongated Levallois point with thick, rounded tip and regular, nearly abrupt retouch one edge and flat-to-semi-abrupt retouch on other edge; white patina. 6, Convergent concave straight racloir on a triangular Levallois point with atypical chapeau-de-gendarme butt; tip broken and right edge re-worked; 0.6cm. thick, butt angle 90°; beige flint. 7, Convergent straight convex racloir on an irregular non-Levallois flake with oblique butt; 0.9cm. thick, butt angle 125°; reddish buff flint. 8, Double convex straight (ex-convergent?) racloir, 1.1cm. thick, butt angle 115°, broken at tip and butt; white patina. 9, Offset racloir passing to convergent concavo-convex, on a non-Levallois flake with thick butt; 1.1cm. thick, butt angle 100°; piebald flint; regular flat at truncated the flake.

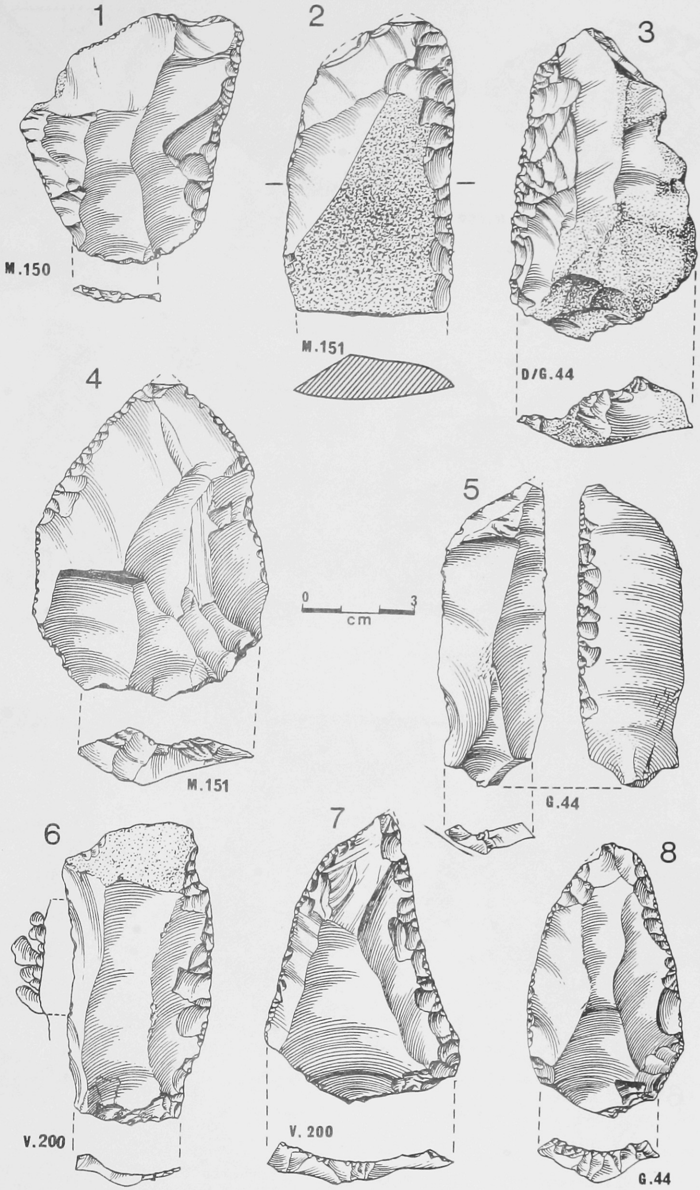


Plate B.5: 1, Single straight racloir on a Levallois flake of beige flint, 0.9cm. thick; butt is thin, at angle of 95°. 2, Single straight (slightly concave) racloir, broken at tip, on a buttless cortex flake, 1.1cm. thick; brown flint. 3, Denticulated racloir, single straight, on a non-Levallois cortex-backed flake of piebald flint, somewhat abraded, with thick butt; 1.4cm. thick; retouch is irregular, invasive but flat. 4, Single convex (passing to double biconvex) racloir on a broad Levallois flake, 1.1cm. thick, thick butt, butt-angle 110°; retouch on right edge is slight and irregular; beige flint. 5, Inversely retouched single straight racloir on a pointed Levallois blade 0.9cm. thick, butt-angle 105°; grey matt flint. 6, Double alternate concavo-convex racloir on an atypical Levallois blade or trimming-flake; notch at the tip on the right edge; 0.9cm. thick, butt angle 95°; beige chert. 7, Double concavo-convex racloir on a triangular Levallois point 0.9cm. thick, butt-angle 110°; tip broken; grey flint. 8, Single (passing to double) convex racloir, tip and one side broken and crushed, flat regular retouch on right edge, butt to tip; made on an oval Levallois flake 0.9cm. thick, butt-angle 105°.

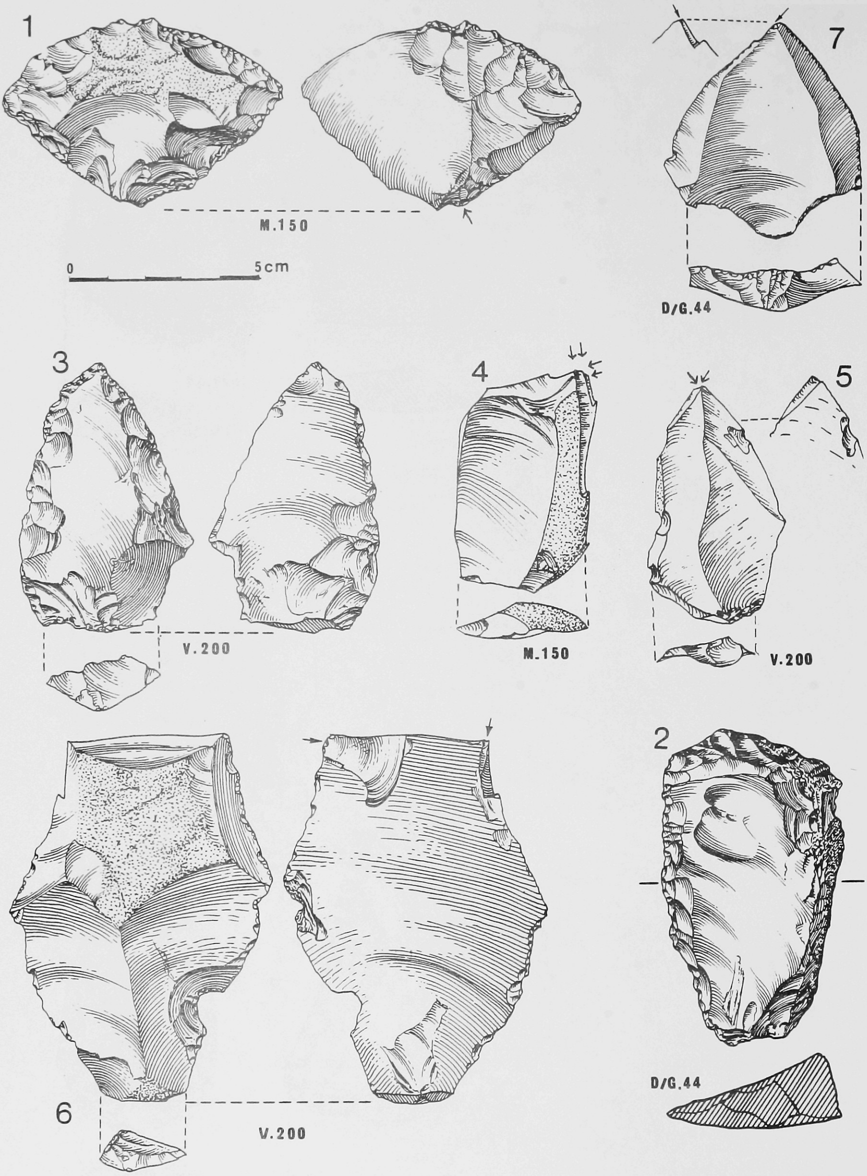


Plate B.6: 1, Bifacially retouched transverse convex racloir, made on the tip of a biface (described in the text); greyish shiny flint, 1.6cm. thick. This piece is probably made on an older tool. 2, End-scraper on a retouched flake, or end-scraper/racloir composite on a non-Levallois elongated flake with cortex back, 1.6cm. thick. Butt-angle is 95°; some squamous retouch on ventral face at tip; brown flint. 3, Bifacially retouched convergent biconvex racloir on a non-Levallois flake. Invasive butt-thinning retouch continuing up one edge as flat retouch; other edge is resolved and semi-abrupt. The bifacial edge is damaged. 4, Right-angle dihedral burin, with plain butt, on a non-Levallois cortex-flake of brown chert. 5, Straight dihedral burin on a sub-triangular Levallois point with core-edge extension on butt; brown flint. 6, Double single-blow right-angle dihedral burin on both upper corners of a heavy non-Levallois cortex-flake, ending in a hinge-fracture. One burin-blow removed a spall from the flake-surface, the other was directed down the lateral edge. Large Clactonian notch on the right edge near butt; brown chert. 7, Single-blow dihedral burin on a triangular Levallois thick chapeau-de-gendarme butt.

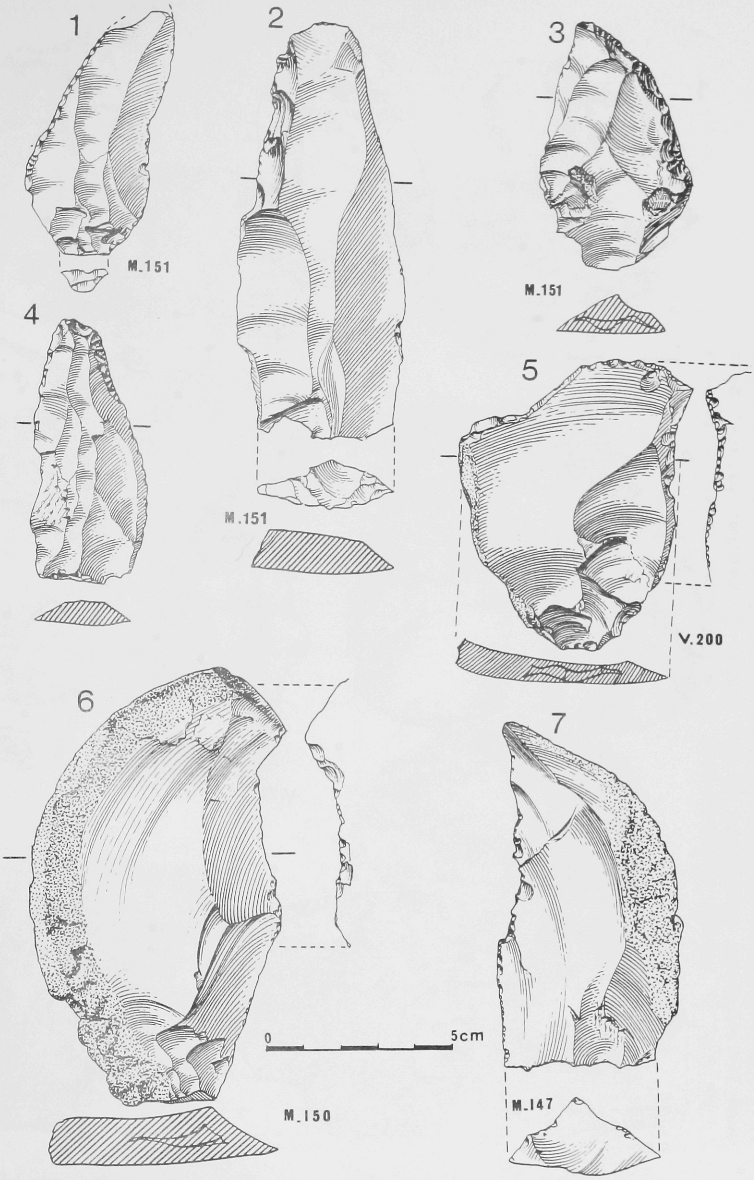


Plate B.7: 1, Backed knife, with abrupt nibbled 'Amudian' retouch, on a Levallois blade 0.7cm. thick; narrow butt, tip broken, white patina. 2, Atypical backed knife on a heavy, unidirectionally prepared blade 1.4cm. thick, with feathered-out tip; abrupt, sub-vertical retouch on distal lateral edge forms good 'finger-rest'; buff matt flint. 3, Backed knife, <u>tête arqué</u> type with abrupt retouch obliquely truncating the flake; 0.8cm. thick; thermal fractures on upper surface; skewbald flint. 4, Atypical backed knife with partially retouched back, near tip of a Levallois blade of buff chert, 0.5cm. thick. 5, Naturally-backed knife on a broad cortex-backed flake; inverse use-damage scars on opposed edge; buff flint. 6, Naturally-backed knife on a heavy non-Levallois flake-blade with chalk cortex back, struck from a rounded pebble; base is 1.4cm. thick, though butt is small; butt-angle 95°. 7, Naturally-backed knife on a non-Levallois flake with cortex back and heavy butt, 1.5cm. thick; use-damage scars and notches on the cutting-

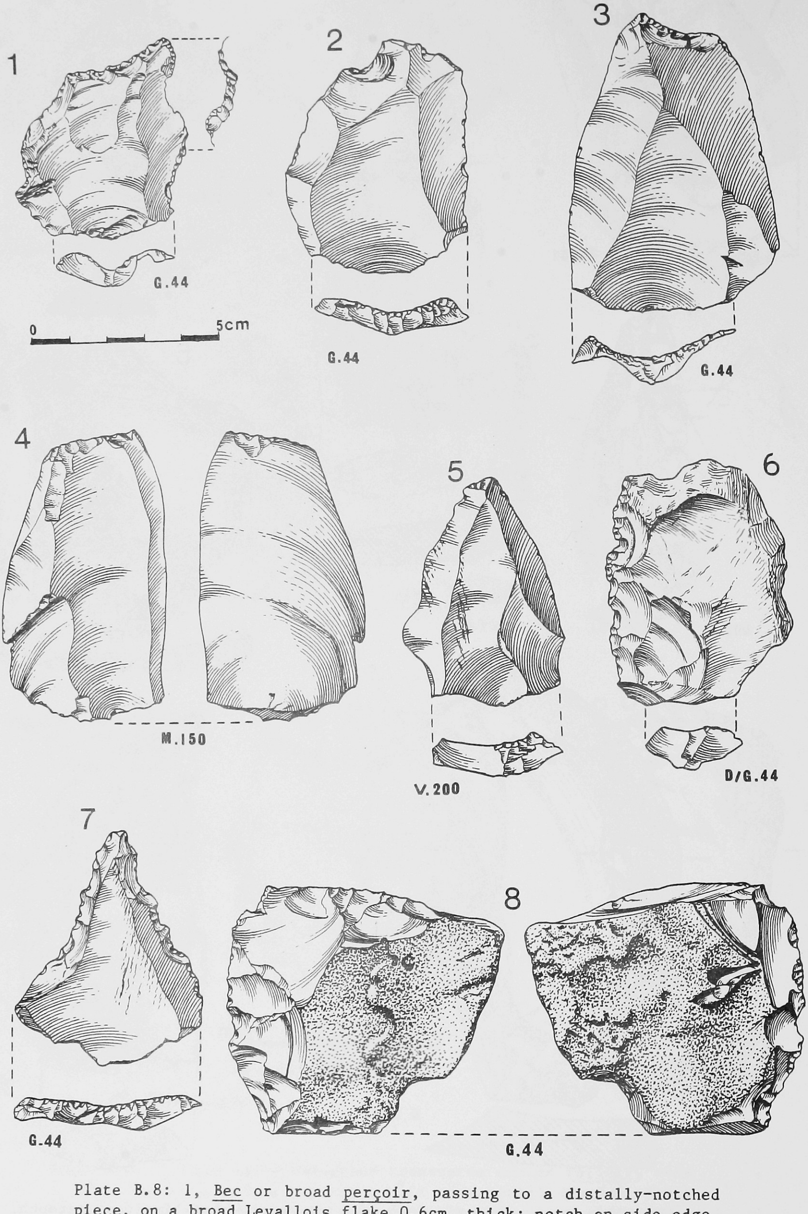


Plate B.8: 1, Bec or broad perçoir, passing to a distally-notched piece, on a broad Levallois flake 0.6cm. thick; notch on side edge, formed by irregular inverse retouch; white shiny flint. 2, Notch on a Levallois flake with finely faceted butt, 0.7cm. thick; grey chert. 3, Distally notched piece, passing to a concave truncation on a Levallois triangular flake 1.7cm. thick; semi-abrupt retouch in notch; buff Nummulitic chert. 4, Squamous flake with splintering on both surfaces at the tip on a thin atypical Levallois flake of brown chert. 5, Truncated sub-triangular Levallois flake; tip removed by fine, abrupt retouch; piebald flint. 6, Denticulate on a non-Levallois flake, 1.1cm. thick, with a (desilicified) back, possibly from core preparation. The butt has been roughly thinned on this piece (not shown). 7, Denticulate, a double concave tool on a triangular Levallois point with very convex butt; retouch is irregular; white flint. 8, Fragment of bifacially-retouched tabular slab, passing to an atypical chopping-tool, 1.3cm. thick; whitish flint, cortex on both faces and one edge.

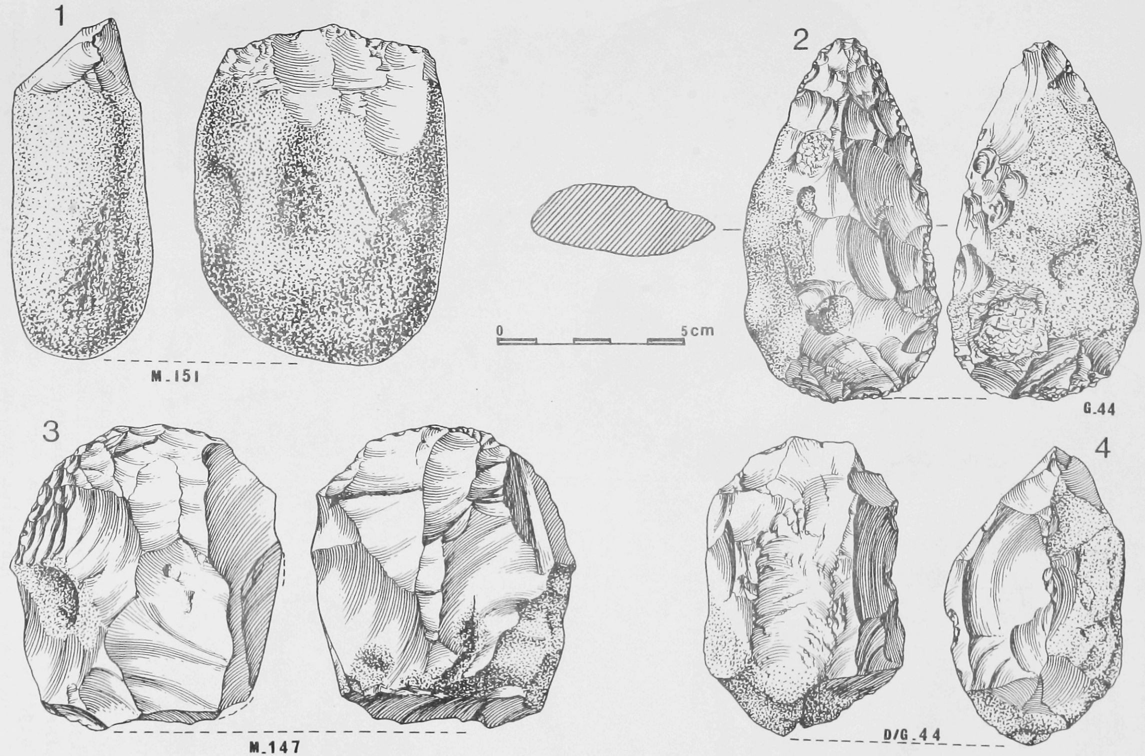


Plate B.9: 1, Pebble chopping-tool of shiny brown chert, made on a hammerstone/anvil (described in the text). 2, Partial biface, made on a flat pebble or (?tabular) flint, ovate in form; the retouched edge is straight, base worked to a sharp edge, tip thin; dark brown flint. 3, Divers biface; see text for description. 4, Chopping-tool on a nodule of white flint, roughly flaked on one surface, other face only partly flaked; working edge partly longitudinal and

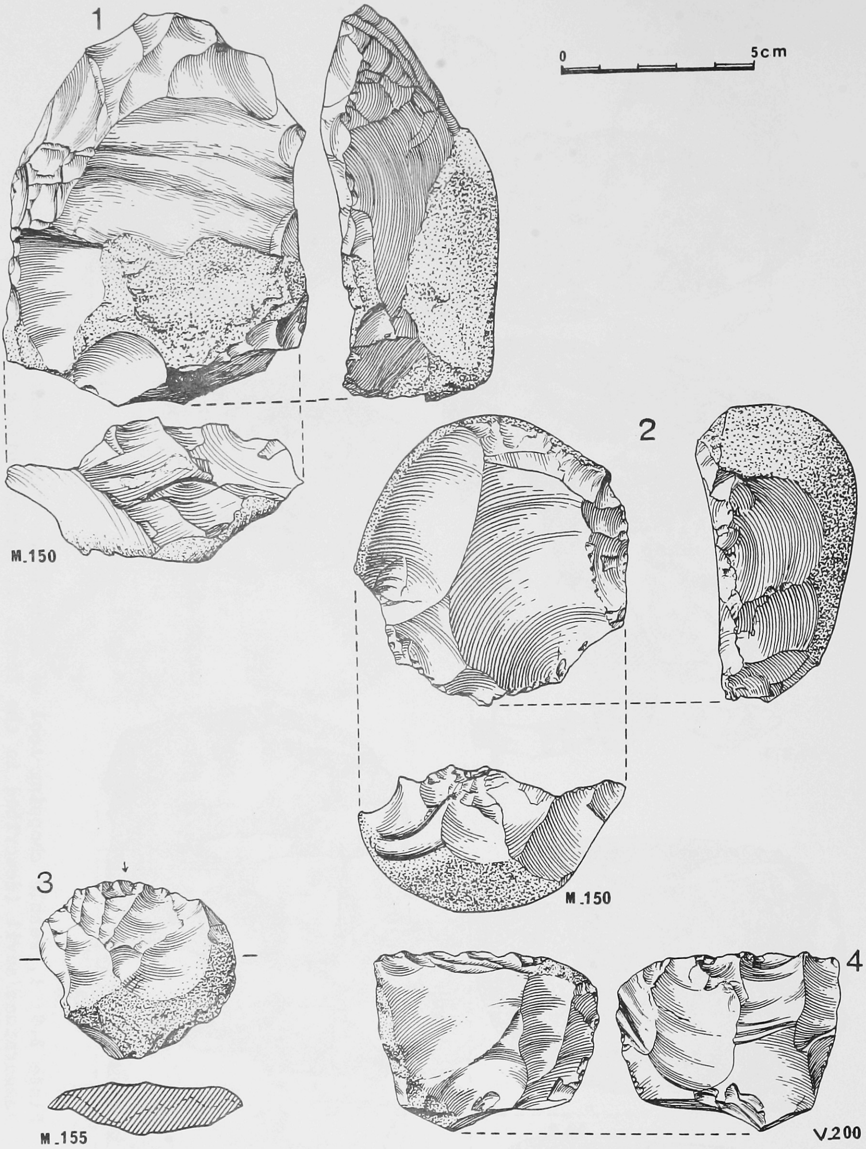


Plate B.10: 1, Levallois core for broad flakes, showing multiconvergent preparation of the upper surface; the negative of the last flake removed is desilicified and damaged; white patina. 2, Unipolar Levallois core for points made on a pebble by rough multiconvergent preparation with negligible side and back trimming; grey chert. 3, Worked out Levallois core for small flakes, made by summary, one-axis preparation; the striking-platform has virtually vanished. 4, Unipolar Levallois core for blades, summary side and back preparation, but finely-faceted striking-platform, visible at top of left-hand view.

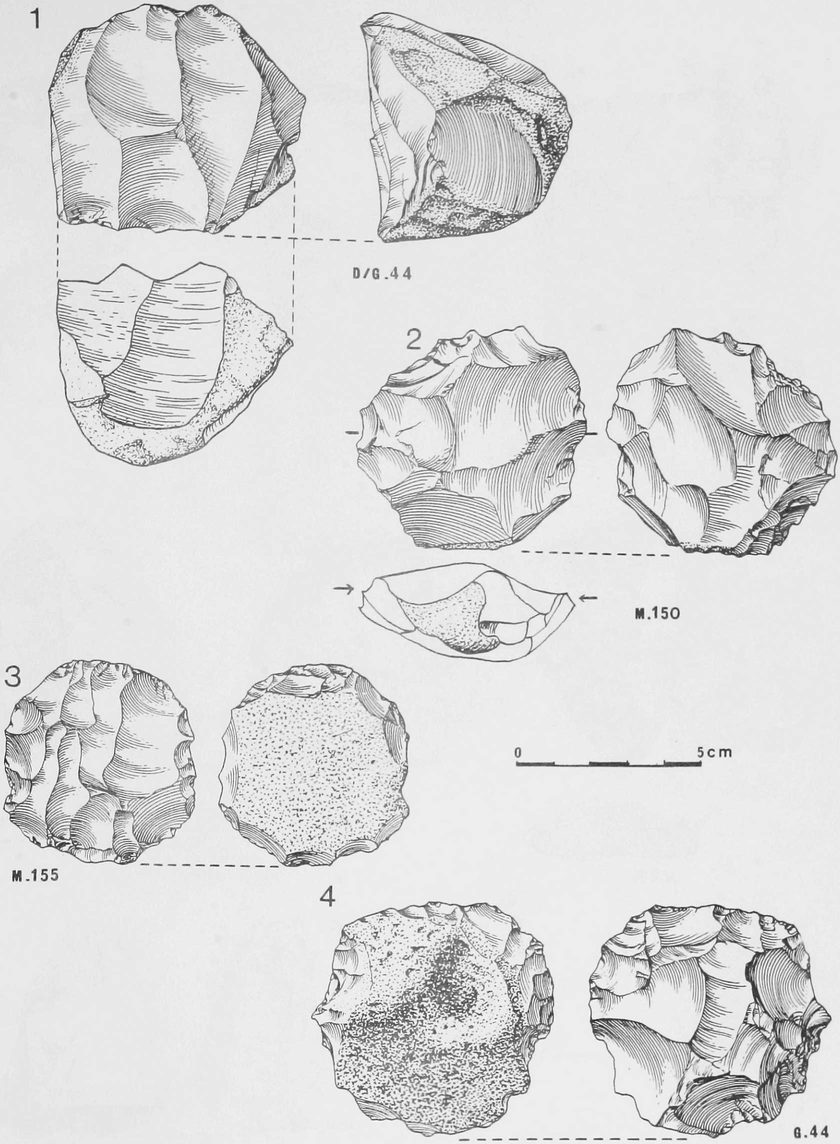


Plate B.11: 1, Levallois bipolar core for narrow flakes or blades made on a pebble with negligible side and back preparation; both platforms are simply faceted; buff chert. 2, Ex-Levallois core, later used as a bipolar core; back and sides have been carefully prepared and the piece may at one stage have been a tortoise core; white matt flint. 3, Worked out discoidal core-base, 1.1cm. thick, not re-worked into a disc, as the ridges around the periphery are sharp and 'frilly'; white patina. 4, Worked-out discoidal core-base, 1.8cm. thick, with multiple platforms and 'frilly' edge; remains of side-preparation suggest its origin as a Levallois tortoise core.

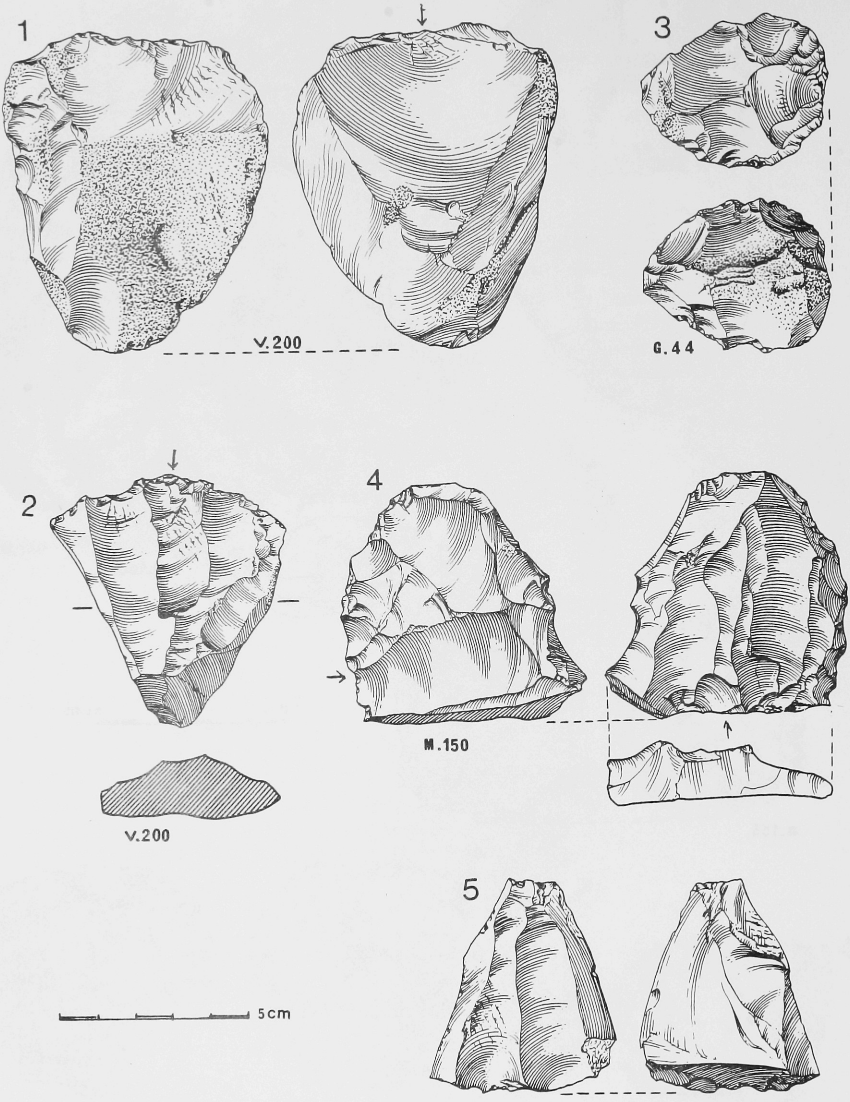


Plate B.12: 1, Triangular point core on a flake, 1.1cm. thick, with summary preparation and narrow striking-platform; the flake struck from this core must have removed the butt of the original cortex-flake. 2, Prismatic unipolar core for blades of Abu Halka type on a flat pebble, without back preparation; striking-platform is plain. 3, Mousterian core on a small nodule, the base is somewhat conical. 4, Polyhedric or back-to-back core, 1.8cm. thick; left view shows that blades were struck off at right-angles to flaking-surface of right view; both striking-platforms are narrow but only one is finely faceted, placed on right edge on right view. 5, Unipolar point or blade core of Abu Halka type, classed as Summary Levallois because of straight striking-platform, but passing to prismatic; simply faceted striking-platform; 1.3cm. thick.

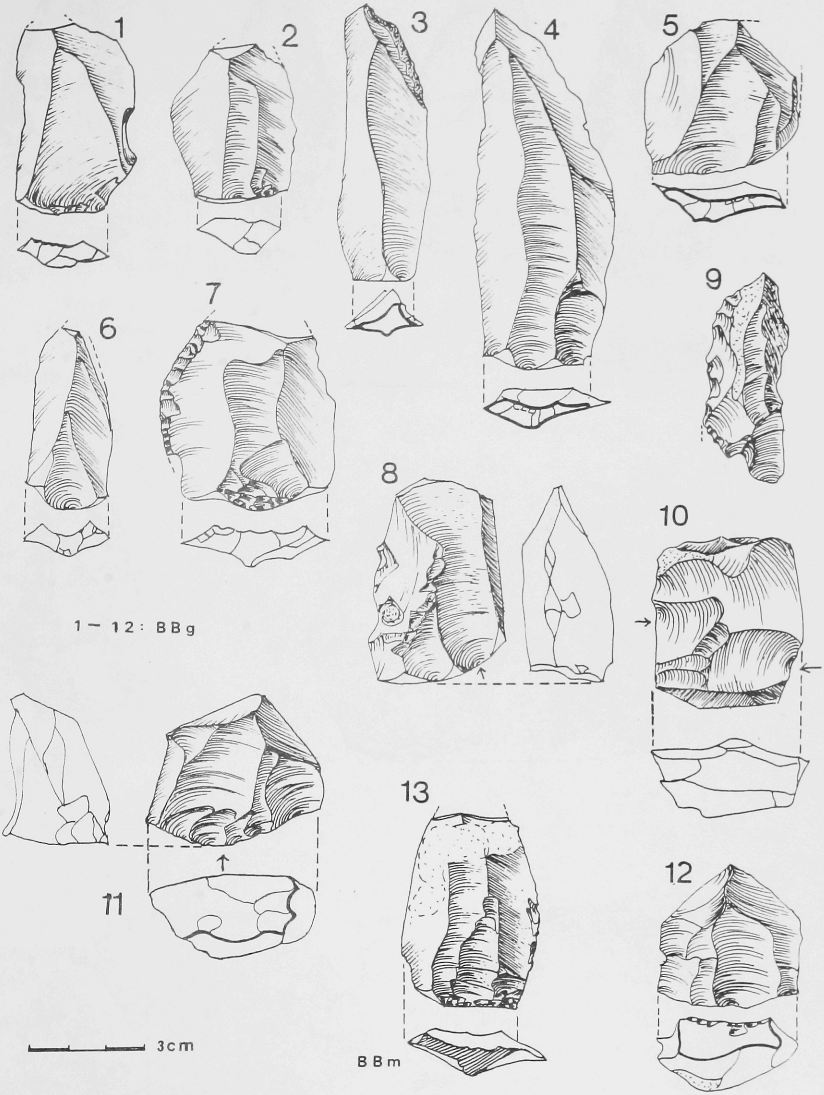


Plate B.13: Numbers 1-12 are from Breccia Block g, number 13 is from Breccia Block m. 1 and 2, Levallois flakes, tips broken but possibly points originally. 3, Atypical Levallois blade. 4, Levallois blade or elongated point. 5, Broad Levallois flake with multiconvergent preparation. 6, Elongated triangular Levallois point, tip broken. 7, Single straight racloir, tip broken off; retouch is neat and flat. 8, Prismatic unipolar core, simply faceted platform. 9, Denticulate: see text for description. 10, Prismatic bipolar core. 11, Summary Levallois unipolar core, simply faceted striking-platform. 12, Summary Levallois point core on a pebble, plain striking-platform. 13, Broken Levallois flake, probably originally a point.

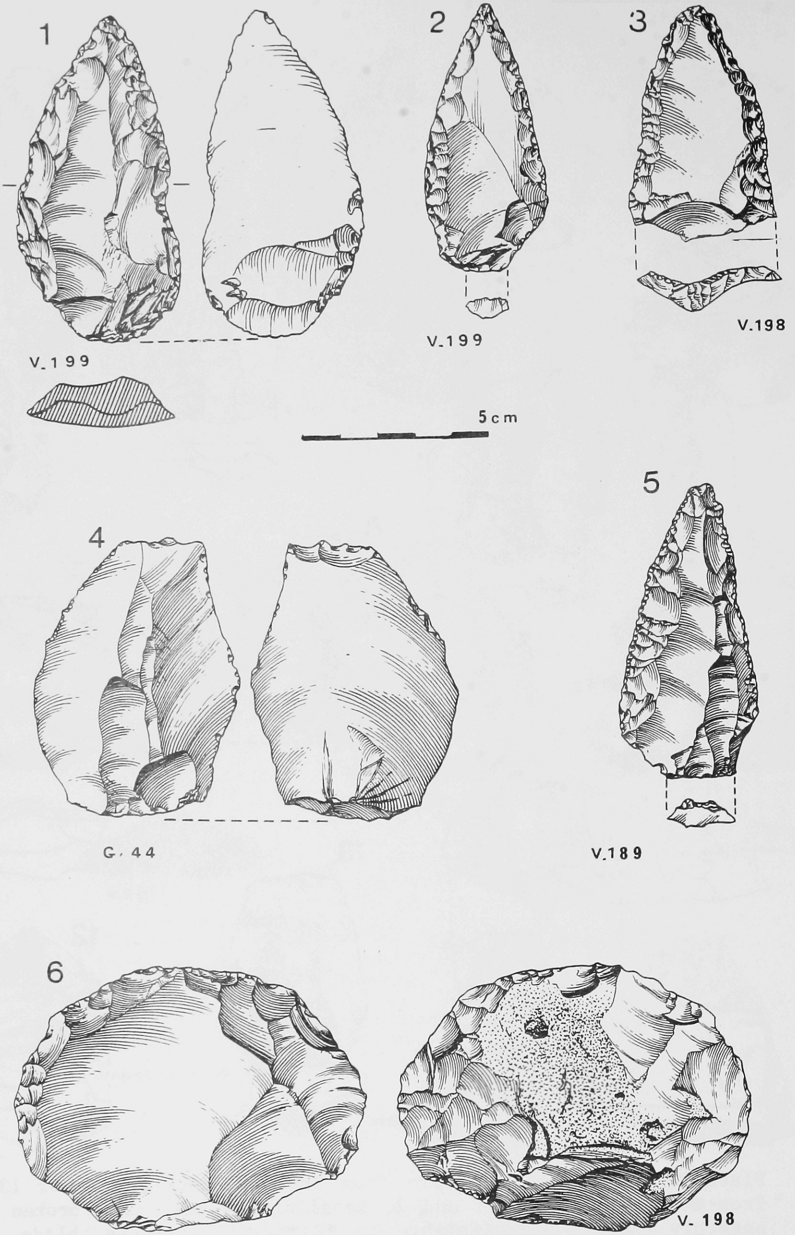


Plate B.14: All pieces are from unstratified layers, except no.4. 1, Elongated Mousterian point with thinned butt. 2, Mousterian point with thin, sharp tip on a non-Levallois flake. 3, Convergent convex racloir on a Levallois flake, with steep retouch on one edge and flatter, parallel retouch on the other. 4, From G44: squamous flake, passing to distally notched or truncated flake. 5, Elongated Mousterian point on a Levallois blade. 6, Classic Levallois tortoise core for broad flakes.

APPENDIX C

DESCRIPTION OF LEVALLOISO-MOUSTERIAN MATERIAL INSIDE BEZEZ CAVE NOT INCLUDED IN THE ABOVE ANALYSES

LAYER D254

Fourteen artifacts assigned by the excavators to Level B were found in Trench D in a layer of black breccia, 10 - 20cm. thick. The artifact-bearing part of D254 was separated from the underlying Yabrudian in D255 by sterile deposits (a rockfall).

Three of these artifacts are in the Cambridge collection, two of them somewhat burnt; the full inventory is included in Table B.3. Some pieces have a distinctly Yabrudian appearance, but the sample is too small for classification as 'Transitional'.

BRECCIA BLOCK BBg (Plate B.13, nos.1-12)

This was removed from above Trench K in the south wall of Bezez, at about 17.00m. above sea-level. As noted by Cornwall (see p.000), the sample contained (besides flint artifacts and bone) shells of land molluscs and marine worms, the latter perhaps representing the sea-level indicator, _Vermettus_. The value of the latter is reduced since it is not known whether the worms had lived on the cave wall proper and were subsequently covered by occupation deposit, or whether they lived on the cemented occupation deposit (as was the case at Naamé (Sanlaville, 1971) and Nahr Ibrahim (Solecki, 1970a)). In any case, the sample has since been lost (I. Cornwall, _pers.comm._, 1970).

When broken up, the block produced 50 artifacts:

CORES (10)

- 2 Summary Levallois, type a (Plate B.13, nos.11 and 12);
- 3 Prismatic unipolar (Plate B.13, no.8);
- 3 Prismatic bipolar (Plate B.13, no.10);
- 1 exhausted disc;
- 1 fragment.

Five of these are completely desilicified, and the others are of brown and grey flint.

PRODUCTS (40)

Nine of the flakes and blades are made of brown flint, nine in greyish buff flint, five are brown and white, and 15 are white-patinated or of desilicified flint.

BUTT ANALYSIS

Levallois flakes:

faceted straight	2
faceted convex	6
dihedral	3
plain	3
linear	3
absent	1

unrecognisable	5
total	25
Levallois blades:	
faceted straight	1
faceted convex	2
plain	1
absent	1
total	5
Non-Levallois blades and fragments:	8
Débris:	7
Total products:	40

Only three of the 50 pieces are tools - two racloirs (Plate B.13, no.7) and one denticulate (Plate B.13, no.9). The drawn racloir is a convex/straight alternate, while the other is a fragment, and the denticulate is the upper half of a larger tool.

The unretouched pieces, all of which are much broken up, are illustrated in Plate B.13; they consist of 35 flakes and 5 blades, all but one made from unidirectionally-prepared cores. At least three might have been triangular points (e.g. Plate B.13, no.6), while one is an elongated Levallois blade or point (Plate B.13, no.4). Ten out of the 16 complete pieces are broad, or at least broader than their butts.

A sample of only 50 pieces may not form a reliable statistical total, but it is worth observing that the indices are comparable to those of the Bezez B layers; the IL would be 54% (as compared to an average of 67% in Level B), the IFl of 56% is the same as the average for Level B, and the blade index would be 20%, the same as that of the average of Level B.

This small sample appears to represent a typical Levalloiso-Mousterian facies, although the flakes seem less heavy, and better made, than those in Level B; they also have a tendency to be broader than long. The remarkable similarity of the technical indices implies that the same technological traditions obtained here as had been used in Level B. Stratigraphically, if the deposits in Bezez were once continuous, the breccia block BBg should represent a considerably later occupation, as it occurred at least one metre above the present top of Level B.

BRECCIA BLOCK BBm (Plate B.13, no.13)

A small chunk of breccia was removed from the south wall of the cave at 16.50m. above sea level, just below the Phoenician inscription which overhangs Trench K. Apart from several flint chips and bone splinters, one triangular Levallois point (Plate B.13, no.13) was extracted. This is a beige flint piece which was unidirectionally prepared on the core, and it has a pronounced bulb and plain butt. The tip, broken during detachment, appears to have been lost.

BRECCIA BLOCK BBe

This occurred on the south wall at the entrance to Bezez Cave, below the present drip-line, at between c. 16.35 and 18m. above sea level. Six fragments of (?ungulate and rodent) teeth and three long bone fragments were obtained, together with five broken flakes, one of which is a pseudo-Levallois point, and one a blade segment. There are three other pieces, all unrecognisable chunks.

TRENCH M (TOP)

The Field Register described the position of this group as 1.30m. from the left (North) wall at 16.35m. above sea level, or 5 - 6m. east of the N.E. corner, 'near pit'. It should, therefore, have overlain Trench M, layer 147. The artifacts, six in number, consist of a Levallois core, three Levallois flakes, one Levallois point and one non-Levallois cortex blade 10cm. long. Only one piece is retouched; it is a notched flake in white patinated flint with a thick faceted butt.

SELECTION FROM 'VICTORIA CAVE' (Plate B.14)

Thirteen typical pieces were chosen for illustration from among several thousand artifacts found in mixed contexts in the inner recess, 'Victoria Cave'. One is a classic Levallois core in white desilicified flint (Plate B.14, no.6), and the other pieces include Mousterian points of Abu Sif type (nos.1, 2 and 5), a <u>limace</u>, and convergent <u>racloirs</u> (no.3).

The locations of other Levalloiso-Mousterian material outside Bezez Cave are described below in Chapter 6.

APPENDIX D
INVENTORIES OF G44 AND D/G44 BEFORE AMALGAMATION

It is interesting to record the inventory of these two 'pure' Levalloiso-Mousterian units as they were excavated, from between sterile layers, and before the first sorting or even washing:

List from the Field Register	G44	D/G44
Bifaces	1	-
Chopping-tools	5	4
Rabots (steep and massive scrapers)	1	1
Retouched Levallois points	9	1
Unretouched Levallois flakes, points, and slightly retouched Levallois flakes	139	79
Levallois blades	70	12
Racloirs	19	30
End-scrapers and composites	1	3
Burins	1	-
Denticulates and notches, squamous and variously retouched pieces	5	20
Unretouched non-Levallois flakes and fragments	31	16
Cores	21	6
Totals	303	172
		477

Since there now exist 444 pieces from the amalgamated totals, 33 pieces seem to have been discarded. After washing, some pieces had to be re-classified (for example, some *racloirs* were reassigned to other retouched classes). The present classification, which includes material in the Cambridge collection only, is divided between G44 and D/G44 as follows:

	G44	D/G44
Bifaces	-	-
Chopping-tools	1	1
Rabots	-	1
Retouched Levallois points	2	2
Unretouched Levallois flakes and points, plus slightly retouched Levallois flakes and points	45	42
Levallois blades	14	11
Racloirs	12	6
End-scrapers and composites	-	1
Burins	-	2
Denticulates and notches	7	7
All other retouched tools	8	7
Non-Levallois flakes, blades and naturally-backed knives	29	10
Cores	8	5
Totals	126	95
		221

This last list demonstrates the similarities between the two units, which suggested that they could be amalgamated for the purposes of analysis.

SECTION IV
THE AURIGNACIAN OF BEZEZ CAVE, LEVEL A

INTRODUCTION

Although Bezez Cave was occupied for a time in the later part of the last glacial period, little of the deposits of this period has survived intact. The Upper Palaeolithic material comes from three sources, referred to in this report as Group I, 1 and 2 and Group II.

GROUP I(1)

Material was found _in situ_ in the hanging breccias adhering to the walls of the cave at altitudes of 18 - 20m. above sea-level; some pieces were removed by the excavators and broken up to recover the archaeological remains. These units form relatively sealed deposits, but because they are not physically in stratigraphic connection with the layers in the trenches, their value is limited; they are described below as samples BBk and BBl. Upper Palaeolithic material no longer _in situ_ was recovered from other blocks of breccia which had fallen from the wall into deposits of a much later period; one of these, described as sample BBc, was found in mixed deposits close to the surface of Trench K; another, sample BBAbd, was found in the Division I excavation, in the Neolithic filling. A third ('Bez. 1958') was found on the surface of the cave before excavation had begun, in 1958, when the same excavators were working at Abri Zumoffen. Each of these units in itself does constitute a valid Palaeolithic assemblage, though with obvious limitations.

GROUP I(2)

Upper Palaeolithic layers were uncovered during the excavations of the main part of the cave, layer D252 in Trench D and units 40-43 in Trench G, at about 14m. above sea-level. However, these layers, although internally undisturbed, may not be in their original positions; the presence of a series of Levalloiso-Mousterian breccias on the walls, at these and higher (15 - 17m.) elevations, and the presence of the Upper Palaeolithic breccias _above_ these at 18 - 20m. are suggestive of the gradual subsidence of D252 and G40-43 from a higher elevation to their present positions. Nevertheless, since, as will be seen, these layers contain material virtually identical to that in the breccias, they will be considered here - with certain reservations - as _in situ_, and referred to Level A. All the above material forms "Group I" in Tables A.1-A.3.

GROUP II

Abundant Upper Palaeolithic material was found in mixed deposits; it is listed in the same Tables as "Group II". It came from various locations, as follows:

1) At the eastern extremity of Bezez, in 'Victoria Cave', in layers V197-199 and 201-203, all of which had been disturbed by burrowing animals.

Sample	Excavators' portion: Cambridge collection	Lebanese portion: Beirut collection	Sub-total	Total
Group I: Layers in place:				
G40	33	40	73	
G42	29	-	29	
D252	5	13	18	
Breccia blocks:				
BBk	1	-	1	
BBl	1	-	1	
BBc	50	-	50	
Bez. '58	15	65	80	
Bez. Abd.	7	-	7	
Sub-totals, Group I	141	118	259	259
Group II: Poorly stratified material and selections from mixed deposits:				
S101-103	12	44	56	
K4-6	6	60	66	
V197-199; 201-203	33	62	95	
G30-32; G/K30: D/G30	57	47	104	
Section cleaning, G30-48	7	104	111	
Division I	49	140	189	
Sub-totals, Group II	164	457	621	621
Grand totals	305	575	880	880

Table A.1: Inventory and present allocation of Level A and other Upper Palaeolithic flint material from Bezez Cave.

2) In Trench S, layers 101-3, at the point where the layers broke off at the edge of the main swallow-hole.

3) In Trench K, layer 4, in the filling of the Neolithic pit.

4) In Trench G, layer 30, and in the neighbouring baulks G/K30 and D/G30, which also consisted of the filling of the Neolithic pit.

5) In layers of the filling above layer 30, Trench G, i.e. within Division I, dug by the Department of Antiquities' team. This unit contained flint and pottery of all periods, from Acheuleo-Yabrudian to Recent.

The material which, by comparison with the material in situ, was judged to be Upper Palaeolithic, was catalogued by the excavators in the Field Register, and a preliminary study was carried out in order that a division of the finds could be made between the Lebanese Department of Antiquities and the excavators. The material was divided as set out in Table A.1. The portion assigned to the excavators was brought to London, where the majority of artifacts were drawn. It was studied there by the present writer, and forms the basis of the report. It has now been sent to the University Museum, Cambridge.

METHOD OF ANALYSIS

The term 'Level A' should apply strictly only to units G40-43 and D252, but for convenience will cover all the units (i.e. Groups I and II) listed in Table A.1. The study will not follow exactly the same pattern as that used for Levels C and B; unfortunately, the lack of stratigraphic connection between some of the units and the disturbed condition of some of the other findspots make it necessary to study each unit separately.

In the case of units where the bulk of the material is in Cambridge, the artifacts are briefly discussed, while the drawn pieces are described in detail; an inventory is then appended. Conversely, in cases where the bulk of a unit's material is in Beirut, and has not been studied by the present writer, a list of its contents, extracted from the Field Register of 1963, is given; the drawn pieces which are at Cambridge are then described.

The Cambridge collection is ordered and classified in Table A.2, following the Upper Palaeolithic typelist for the Near East of F. Hours, a revised version of which appeared in 1974; this list incorporates the specifically Levantine material and types discovered by previous workers, for example Garrod, Neuville and Rust, and hence is to be preferred to that of D. de Sonneville-Bordes and J. Perrot (1954-1956), which was a more generalised Upper Palaeolithic list. Using the Field Register, the Beirut collection has been fitted into the same typelist as best it could.

TERMINOLOGY

In order to explain various terms which will be used in this study, it is necessary briefly to review the history of Upper Palaeolithic studies in the Levant.

1. DIVISIONS OF THE UPPER PALAEOLITHIC

In the early days, the interpretations of scholars were based largely on the sequences found by Garrod in the Mount Carmel caves and by Neuville in the Wadi Khareitoun, Judea (Garrod and Bate, 1937; Neuville, 1951). The latter used a six-fold scheme, starting with Phase 1 which was a kind of transitional facies from the Middle Palaeolithic, followed by Phase 2, in which blades, points and other Upper Palaeolithic features became more pronounced. The Middle and Late Aurignacian appeared in Phases 3 and 4, and Phase 5 was seen as a kind of final Aurignacian leading to Phase 6, where bladelet-dominated industries appeared. Garrod came to use the name Emiran for Phase 1, Lower and Upper Antelian for Phases 3 and 4, Atlitian for Phase 5 and Kebaran for Phase 6.

At the London Terminology Symposium in 1969, J. Waechter described the long and almost complete sequence of Upper Palaeolithic industries at Ksar Akil (Lebanon). In order to include this new data in the Levant Upper Palaeolithic chronology, the participants worked out the following scheme:

(a) Ksar Akil Phase A: Ksar Akil levels 25-20 (approximately equivalent to Neuville's Phase 1 or Emiran).

(b) Ksar Akil Phase B: Ksar Akil levels 19-15; there are two sub-phases, Bi and Bii (approximately equivalent to Neuville's Phase 2).

(c) Levantine Aurignacian A: Ksar Akil levels 13-11 (known so far only from Ksar Akil, but probably connected with the Ahmarian Tradition recently recognised in the southern Levant (Marks, 1981; Gilead, 1981).

(d) Levantine Aurignacian B: Ksar Akil levels 10-8 (corresponding approximately to Neuville's Phases 3 and 4, or Lower and Upper Antelian).

(e) Levantine Aurignacian C: Ksar Akil levels 7 and 6 (corresponding approximately to Neuville's Phase 5 or Atlitian).

We should note that these phases were defined following the work of J. Waechter (1976) on J.F. Ewing's material excavated in 1948 at Ksar Arkil, Dortch (1970) on the Late Aurignacian of Ewing's levels 8-6, Azoury (1971) on the Transitional levels 25-15, and Newcomer (1971; 1972) on the burins and technology, the last three working on the 1937 material from Ksar Akil reported by J.F. Ewing (1947). Unfortunately, only the upper levels have so far been reached by the more recent excavations at Ksar Akil by Tixier, and these have not been fully published yet; already, however, there are indications that the 1969 scheme for the upper levels was over-simplified (Tixier and Inizan, 1981).

During the last few years new Upper Palaeolithic sites in Palestine have been found and studied, e.g. Hayonim (Bar Yosef, 1970; Belpher-Cohen and Bar Yosef, in press) and Rakefet (Ziffer, 1978a, quoting further references), as well as sites in the Negev (Marks, 1981). Other already known assemblages have been re-evaluated, such as Yabrud Shelter II (Ziffer, 1981) or re-excavated, for example Kebara (Ziffer, 1978b). As a result, the 1969 scheme can now be regarded only as a very broad

generalisation, applicable mainly to Ksar Akil, and not reflecting regional differences such as are now observed in the southern Levant. Nevertheless, since Bezez Cave is located to the north of Mount Carmel, it can be expected to relate more to the pattern seen at northern sites than to that recognised in the Negev. The terminology of the 1969 scheme will therefore be used (with appropriate reservations) in this study.

2. UPPER PALAEOLITHIC TOOL-TYPES

The terms used in the Field Register for tool-types have been retained here, with two exceptions: the original designations 'steep-scrapers' and 'burins' have been amended as follows:

Steep-scrapers on cores

These are now classed as unipolar or bipolar cores. This is because, as Tixier (1963) has noted, the regularisation of the edge of the core is normal flint-knapping practice before striking off the next blade; it is thus almost impossible to say whether or not, in some cases, similar retouch was done to make a scraping edge, though possibly microwear analysis may one day produce evidence on this point. Except for special cases, the class recorded in the Field Register as "steep-scrapers on cores" has been omitted and the tools reclassified.

Carinated burins, and Flat-faced carinated burins

These are dihedral burin variants and are crucial to the relative dating of the Bezez Upper Palaeolithic, since in the Levant they appear only with the first Aurignacian phase, offering (when present) a terminus ante quem. We will therefore consider them in some detail. This type of burin was included with other prismatic or polyhedral burins by Garrod (1954; Garrod and Bate, 1937) and Neuville (1951); for Hours (1974) they are types D.5 and D.6, burin caréné and burin caréné plan while for Newcomer (1972) they are 'carinated burins' (his type 7) and 'flat-faced carinated burins' (his type 6), also called by some 'Ksar Akil burins', e.g. by Waechter (1976).

a. Flat-faced carinated burins

In this type the prismatic spall-removal facets, although struck transversally on the thickness of the end of the blank, as in a beaked burin, incline obliquely downwards, curving on to the lower (bulbar) surface, as in a burin plan. Most often these down-curving facets are opposed to a neutral or plain surface; occasionally however, the edge of this surface has been resharpened by a normal burin-blow, as shown in Plate A.1, no.13.

b. Carinated burins

In this type the multiple spall removal facets remain on the thickness of the piece, where they curve down the lateral edge, as shown in Plate A.2, no.10. Carinated burins grade into normal dihedral types where the burin facets are straight and occur on the thickness of the blank, as in Plate A.2, no.11. Others represent a

forme-de-passage between burin and carinated scraper; on some of these, the working-edge is far wider than normal for burins (e.g. more than 1.6cm.), but they are still technically burins because the burin facet is struck on the _thickness_. In other cases the sideways struck facets encroach on to the _upper_ surface. Sometimes they even join facets struck directly from the flake-surface, as in normal scrapers. The working edge may be semi-circular, straight, oblique or sinuous. The term 'scraper-burin', recently used by Copeland and Waechter (1968), reflects just this feature; see a review of the subject by Dortch (1970), and see also Copeland (1976) and Brézillon (1968, p.167 _et seq._, especially p.178). Carinated burins occasionally have a small stop-notch, slight battering, or area of light retouch in mid-section, presumably to limit the length of the facets; in contrast, on the French beaked burins, this notch is more distally placed. For illustrations of Levant types see Newcomer (1972, figs.19.9 and 29.10).

The main attributes of the thirteen specimens in Bezez A are set out in Table A.4 and discussed in Appendix E of this chapter (see below, p.365).

Chanfreins

"_Lames et éclats à chanfrein_" were first described in Lebanon by Haller at Abu Halka in levels IVe and IVf (1946). More recently those of Ksar Akil levels 25-22 have been the subject of detailed studies by Azoury (1971) and by Newcomer (1970), who used the term "chamfered pieces"; the latter has distinguished five sub-types. Copeland (1970) has described other _chanfreins_ from Antelias Cave levels VII-V. _Chanfreins_ are basically blades or flakes which have had a blow struck across the distal end transversely on the thickness, from a striking-platform on the lateral edge; the working-edge thus created is bevelled or chamfered. This tool-type is recognised as characteristic of the first Upper Palaeolithic phase in Lebanese caves and shelters. Although _chanfreins_ disappear at all three of the above-mentioned sites well before the Aurignacian phases, single specimens do occur sporadically in later (Aurignacian) levels, as Dortch (1970) and Belper-Cohen and Bar Yosef (in press) have reported.

Offset débitage

This denotes a method of striking a blade or bladelet off the core so that the bulb occurs on the corner of the proximal end, oblique to the long axis. The feature has been noted by J. Tixier and M. Newcomer (pers.comm., 1977) on material from Ksar Akil, and is present at most Levantine Aurignacian sites known to this writer.

ILLUSTRATIONS

Tables are prefixed with the capital letter A (for level A). Flint drawings are on Plates A.1-5. Since each drawn piece is described in the text, detailed captions are not provided with the Plates.

COMPARISONS

It may be noticed that in comparing individual tools from Bezez A with artifacts from other sites, there is an emphasis on pieces from El-Wad, Kebara, Yabrud II, Ksar Akil etc. This is because at the time the Bezez material was being studied, the material of more recently excavated sites had not yet been published.

THE ARCHAEOLOGICAL MATERIAL

GROUP I: STRATIFIED LAYERS AND BLOCKS OF BRECCIA

TRENCH G, UNITS 40-43

As described by Kirkbride in Chapter 3, the sounding G40 and the layer G42 occurred at c. 14m. above sea-level, below the Neolithic filling, and separated from it by a dark level, G41. Another black layer, G43, underlay G42, and below this the greyish-red sandy Levalloiso-Mousterian layer G44 occurred (see also Figs.S.8-10).

ARTIFACTS FROM G40

Most of the artifacts are in Beirut, but the Field Register gives the following list:

	Sub-type	Class total
<u>Cores</u>:		
Unipolar, steep front, pyramidal (3 'noses')	1	
Unipolar, steep broad front, round end (1 on a nodule)	2	
Unipolar, steep broad front, round end (twisted facets)	2	
Unipolar, steep broad front, pointed end (twisted facets)	2	
Unipolar, steep narrow front, round end (twisted facets)	5	
Unipolar, steep narrow front, pointed end (twisted facets)	1	
Miscellaneous (1 with edge renewed)	1	14
<u>End-scrapers</u>:		
Single (1 broken)	3	
Straight	1	
Double, broad	1	5
<u>Burins</u>: Carinated, prismatic	1	1
<u>Retouched bladelets</u>	2	2
<u>Bladelets</u>, unretouched	33	
<u>Blades</u>, unretouched, small and irregular	11	
<u>Flakes</u>, unretouched	7	51
Total		73

Thirty-three of these artifacts are at Cambridge and are described as follows, the drawn pieces first.

Plate A.1, no.1. Abruptly retouched (backed) and obliquely truncated bladelet, with an irregular edge. The butt is minute linear. Brownish matt flint.

Plate A.1, no.2. Flat-faced carinated burin, with multiple facets opposed to a single facet. It is white-patinated and made on a core-trimming flake.

Plate A.1, no.3. Unipolar core for bladelets, white patinated, with narrow front, retouch down one side and twisted facets (for an explanation of this term, see p.353 below).

Plate A.1, no.5. A well-made end-scraper on a blade of fine Eocene flint, 7.0 x 2.8 x 1.8cm.

Plate A.1, no.6. Unipolar core for bladelets, with broad front and twisted facets. White-patinated.

Pieces at Cambridge but not illustrated include:
A notched and roughly truncated blade in skewbald flint.
A broken end-scraper on the distal end of a white-patinated narrow blade.
Five small unretouched blades with cortex, three with punctiform butt and one with linear butt. The dimensions of the largest and smallest were respectively 4.0 x 3.2 x 1.3cm. and 2.0 x 0.8 x 0.2cm. They are all white-patinated and desilicified.
One complete pointed small blade, white-patinated.
Five unretouched flakes and two flake-fragments.
Fourteen bladelets, four of which are pointed; three may be burin-spalls.

REMARKS

As is perfectly appropriate for an Upper Palaeolithic assemblage, half the artifacts are bladelets, and another quarter are blade/bladelet cores. The burin is of a type which (as mentioned above) appears at Ksar Akil only in the Levantine Aurignacian A-C and post-Aurignacian levels (i.e., equivalent to Neuville's stages 3-5). The obliquely-truncated bladelet is an indication of a late stage in the Levantine Upper Palaeolithic sequence; the first specimen of this kind to appear at Ksar Akil occurs in level 8 according to Dortch (1970; see his Fig.28, no.12). It is to be noted that only a small proportion of artifacts in this unit are unpatinated. The bulk are either white-patinated or actually desilicified.

ARTIFACTS FROM G42

Twenty-nine pieces were found, all of which are now at Cambridge; they are described as follows, drawn pieces first:

Plate A.1, no.7. Composite burin and end-scraper. The burin is a double dihedral and the end-scraper is made on the butt-end of the blade, the bulb having been removed. Nummulitic chert.

Plate A.1, no.8. End-scraper on the butt-end of a cortex-tipped blade with cortex down one side and without butt or bulb. White-patinated flint.

Other pieces consist of:

A small notched cortex-flake with oblique linear butt and cortex on one side.

An atypical nosed scraper on the butt end of a cortex flake with bulb removed. On the side opposite to the nose there is an inversely-retouched notch. White-patinated flint.

A core-tablet of skewbald flint on a flake with faceted butt, 'utilised' as a tool judging by some abrupt retouch which forms a back, and traces of use.

A right-angle dihedral burin, on a break; the piece is a mottled matt brown chert blade with linear butt.

Three large blades, all with linear butts, none pointed; two are white patinated and one is in piebald flint. The two largest measured 7.0 x 2.7 x 1.2cm. and 7.0 x 2.4 x 0.9cm.

Six medium blades, all white patinated but one, which is in brown flint; 3 have punctiform butts and one a linear butt, while two are without butts. The largest measured 5.0 x 1.3 x 0.4cm., another measured 4.7 x 1.2 x 0.5cm. Two have core-preparation retouch, one at the distal end, the other on the lateral edge.

Five bladelets, only one complete. All are white patinated and one each have punctiform and plain butts, while three have no butts. The largest measured 3.5 x 0.9 x 0.2cm.

Nine flakes and fragments: one with plain butt, in brown flint, very small; two with punctiform butt in white patinated flint; five fragments, all white-patinated; one possible burin-spall, white-patinated.

INVENTORY OF G42: SUMMARY

(N.B. Since this was one of the units brought to England where the present writer was able to study the material, the inventory represents the results of the study and is not (as was the case with G40) taken from the Field Register.)

	Sub-type	Class total
Cores	-	-
Tools:		
End-scraper	1	
Nosed scraper	1	
Dihedral burin	1	
Composite, burin/end-scraper	1	
Denticulated flake	1	5
Débitage:		
Core-tablet	1	
Unretouched blades	9	
Unretouched bladelets	5	
Unretouched flakes and fragments	9	24
Total		29

REMARKS

This assemblage does not include any cores, but there are some blades larger than those found in the other Upper Palaeolithic units from Bezez. None of the tools is diagnostic, although all would fit in with an Aurignacian or later context. As in layer G40, the bulk of the material is patinated white or desilicified.

LAYER D252

Described as "Fine brown earth: U.P.", this layer underlay layer D251 and overlay D253, both sterile levels. The Field Register gives the following list:

	Sub-type	Class total
Cores:		
Unipolar, broad front, round edge, twisted facets	1	
Unipolar, broad transverse edge	1	
Various	1	3
End-scraper: on a blade	1	
Nosed scraper	1	
Double carinated scraper (semi-steep, transverse platforms)	1	3
Burin, prismatic, rough: on a flake	1	1
Small and delicate blades, unretouched	5	
Bladelets: unretouched	5	
Trimming-blade with cortex	1	11
Total		18

Of these 18 pieces, only five are in Cambridge:

Plate A.1, no.4. Alternate carinated scraper in brown piebald flint, unusual in that the distal frontal is made on the inverse, and the proximal frontal by direct retouch which has removed butt and bulb. It is 0.9cm. thick. The upper frontal is slightly broken. Compare with a similar piece from Antelias III (Copeland and Hours, Plate 4, no.1).

Plate A.1, no.9. End-scraper with carinated, nose-like frontal edge made on a core-tablet of shiny brown flint. One lateral edge has flat scalar retouch and denticulations. Classed as B.2 in the Hours typelist.

Other pieces consist of:
An unretouched trimming-blade of grey flint with cortex.
A burin-spall of brown flint.
A grey patinated bladelet with faceted butt, perhaps a core-tablet.

REMARKS

The few pieces at Cambridge are not white-patinated, but in other respects they appear to be consistent with the material of G40 and G42.

ARTIFACTS FROM THE BRECCIAS BBk AND BBl

One artifact was extracted from BBk, which was a remnant of breccia in situ on the cave wall to the right (south) of the Recent lime-kiln, i.e. south of Trench M, at an elevation of 18.00m. above sea-level. It can be described as follows:

Plate A.4, no.5. Nosed or shouldered scraper on a thick flake with two patinas and large, plain, wide angle butt. The retouch is continuous over the whole length of the working edges and the nose is asymmetrically placed on the left 'corner' of the piece. Mottled brown flint with white patina on the upper surface. Greatest thickness, 1.4cm. (Very similar types are

found at Antelias in levels IV and III; see Copeland and Hours, 1971, Plate 8).

One more artifact was extracted from BB1, another area of breccia in situ on the south wall of the cave, at an elevation of 19.5m., on a projection above Trench K's eastern extremity. It is described as follows:

Plate A.4, no.4. Double short end-scraper on an oval flake in white desilicified flint with the butt removed; there appears to have been another end-scraper on the distal end, now damaged, and partly concealed by stalagmite. The greatest thickness is 1.2cm., but the working end is thin, 0.5cm. thick; compare with the same feature seen on an Antelias IV end-scraper (ibid., Plate 2, no.7).

REMARKS

Although this end-scraper from BB1 would be at home in any Upper Palaeolithic assemblage, the nosed scraper of BBk is strikingly similar to pieces found in Ksar Akil's Aurignacian levels, especially levels 8 and 9, where thick, wide angle, butts are predominant. Similar pieces are seen in Kebara, levels E, D2 and D1; see Garrod, 1954, Figs.3, no.9; 5, no.15; 10, no.4 and 12, no.15. See also el-Wad layer D2 (Garrod and Bate, 1937, Plate XXI, no.3), and Yabrud Shelter II, level 1 (Rust, 1950, Tafel 93, nos.5 and 7) as well as level 3 (Tafel 87, no.9).

ARTIFACTS FROM BRECCIA 'SAMPLE BEZ '58'

This block was discovered in Bezez Cave before it was excavated, in 1958. It was lying on the surface near the south wall, perhaps over what was to become Trench K. It must have become detached from the wall in fairly recent years, though we do not know from exactly where. Most of the material was left in Beirut; the Field Register gives the following list (with core-scrapers now reclassified as cores):

	Sub-type	Class total
Cores:		
Unipolar, broad front, round edge	2	
Unipolar, broad front, spurred edge	1	
Unipolar, broad front, wavy edge	1	
Unipolar, narrow front, round edge	1	
Unipolar, narrow front, round and twisted edge	1	
Bipolar, broad front, round edges (1 miniature, 1 alternating on same plane)	2	
Massive, spurred, in Nummulitic chert	1	
Various, indeterminate	5	14
End-scrapers:		
On flakes	4	
On blades	3	7
Burins: prismatic and carinated, both small and neat (1 is on a core-tablet)	2	2
Denticulated flakes	2	2
Retouched flakes	1	1
Unretouched blades: large	8	
Unretouched blades: medium	14	

Unretouched bladelets	17	
Unretouched flakes	15	54
Total		80

Of these 80 pieces, 15 are at Cambridge, and are described as follows:

Plate A.2, no.1. Unretouched bladelet, broken both ends. White flint.

Plate A.2, no.2. Unretouched bladelet, with punctiform butt, broken distally. Beige matt flint.

Plate A.2, no.3. Unretouched bladelet, offset linear butt, core-preparation retouch on the distal end. Beige matt flint.

Plate A.2, no.4. Unretouched blade, punctiform butt, broken in mid-section. Beige flint.

Plate A.2, no.5. End-scraper on the butt of a blade, broken distally and notched on one side. 0.4cm. thick. This may have been a double scraper.

Plate A.2, no.6. Unretouched cortex flake. Linear butt, white patinated flint.

Plate A.2, no.7. Carinated steep-scraper, atypical, and denticulated, passing to a nosed or shouldered scraper on a thick flake with butt largely removed. The 'nose' is almost vertical and partly undercut, which does not show in the drawing. Matt beige chert.

Plate A.2, no.8. Unretouched blade, broken distally, simulating a chanfrein on a blade with thick plain butt and twin bulbs. However, the absence of lateral retouch to make a platform for the transverse blow, as well as absence of any sign of a negative bulb on the "chanfrein facet", and the 'frilly' and rough lower edge of the facet indicate that the resemblance of this piece to a chanfrein is accidental.

Plate A.2, no.9. End-scraper with a fresh break at the base which may have destroyed a right-angle burin. The end-scraper is neatly made with mixed flat and resolved retouch on a buttless flake of matt brown flint. Compare with Kebara E: Garrod, 1954, Fig.3, no.10.

Plate A.2, no.10. Carinated burin, passing to an aytpical beaked burin or to a dihedral, on a buttless flake of honey-coloured flint. Three curving facets are opposed to one, on the thickness of the flake; the curving facets are limited by a notch, (a) in the drawing. Compare with Kebara D (Garrod, 1954, Fig.11, nos.11 and 12), or with el-Wad C (Garrod and Bate, 1937, Plate XVIII, nos.12 and 14), or with Yabrud Shelter II (Rust, 1950, Tafel 83, no.9; 84, no.4; 85, nos.9 and 7 etc.).

Plate A.2, no.11. Dihedral offset (déjeté) burin on a core-tablet. Two facets are opposed to a single blow. Grey-brown matt flint. Compare with a virtually identical specimen from Kebara E: Garrod, 1954, Fig.2, no.10, and another from Antelias Cave, Level III: Copeland and Hours, 1971, Plate 9, no.6.

Plate A.2, no.12. Denticulate on a rough, desilicified flake with small linear butt.

Plate A.2, no.13. Bipolar bladelet core of white and brown flint. The lower end as drawn may have been used as a burin. Compare with Kebara D (Garrod, 1954, Fig.6, no.4).

Plate A.2, no.14. Unretouched but perhaps utilised flake: an example of "offset débitage".

Plate A.2, no.15. Axial dihedral burin passing to a flat-faced carinated burin; although two straight facets are opposed to two others, one lot inclines slightly on to the lower surfaces of the chunk of skewbald flint; these facets are limited by an area of battering forming a notch at (a) in the drawing. The working-edge is slightly desilicified. Compare with burins in the illustrations of virtually any Levantine Aurignacian site.

An opportunity to examine the Beirut collection of this unit occurred in 1971, and the following notes were made:

a) The edges are fresh and sharp and few pieces are patinated white.

b) Eight of the cores are for bladelets or blades, one is for flakes, and two are double-ended with crossed axes. Six are made of brown and white flint and one of Eocene chert.

c) Of the four end-scrapers, one is shouldered, one on the end of a blade, one is double, and the other is a scraper on a retouched flake.

d) Small and medium blades outnumbered all other kinds and there were no very small bladelets.

REMARKS

This unit is a typical Upper Palaeolithic assemblage, with the unretouched blades and flakes amounting to 58% (compare with 68% in BBc) and the cores to 17%. There are no retouched bladelets in this unit, and unretouched bladelets also seem to be rather few. Of the tools that are present, all are typically Levantine Aurignacian A to C types. It may be significant, in view of the marked difference in some levels at Ksar Akil in proportion of burins to end-scrapers, that out of 11 tools, three are burins and two of the other tools are burin composites. For example, burins outnumber scrapers in levels 8a down to 10a (Phase IV) as shown in Tableau 1, Tixier and Inizan, 1981.

One blade (Plate A.2, no.8) resembles, probably fortuitously, a chanfrein; as Dortch (1970) has shown, one or two chanfrein-like pieces occurred in Ksar Akil levels 8 and 7 (see his Fig.25, no.12), which he classed as 'divers' tools; at Ksar Akil those are the Levantine Aurignacian C levels, apparently equivalent approximately to Tixier's Phases IV-V. An interesting trait evinced by the Breccia Bez 58 material is the suggestion of retouch to limit the burin-facets, seen on two of the carinated burins. At Ksar Akil, a feature of the early Aurignacian levels is the number of burins with distinct stop-notches (Newcomer, 1972); very few stop-notched burins are seen in the Levantine Aurignacian Phases B

and C, however. It would seem that the notches on our specimens are not distinct enough for us firmly to attribute to them a Levantine Aurigacian A date, but the possibility should be kept in mind.

ARTIFACTS FROM BRECCIA BLOCK BBc

This block was found in mixed deposits just below the surface of Trench K, at c. 15m. above sea-level. It almost certainly fell from the south wall of the cave, where other Upper Palaeolithic breccias in patches still overhang Trench K today, from about 18m. above sea-level to c. 20m. The breccia is described as a typical occupation deposit, containing sharp flint <u>débitage</u>, bones, charcoal, and burnt clay crumbs (see Cornwall, this volume, p.74). All of the 50 pieces recovered are at Cambridge and (taking the drawn specimens first) are described as follows:

Plate A.1, no.10. Composite: a double dihedral right-angle burin is opposed to a carinated end-scraper on a thick flake of skewbald flint.

Plate A.1, no.11. Composite: a burin on a rough straight oblique truncation, with a distinct retouched notch near the distal end and another Clactonian notch, which may be new. The blank is a thick Eocene flint cortex flake.

Plate A.1, no.13. Flat-faced carinated burin on a buttless chunk of white-patinated, glossy flint. Three facets are opposed to one, on a twice-refreshed natural surface. Compare with Kebara D-C, Garrod 1954, Figs.11 and 12.

The material not illustrated consists of the following:

An asymmetrical end-scraper on a flake of skewbald flint. Part of the frontal is missing; what remains is an area of minute lamellar retouch on one corner of a small thin flake.

A notch on a 'utilised' thick flake of Eocene chert with plain butt. A new break has removed one corner.

A unipolar bladelet core in white-patinated flint. A fresh break has removed the tip.

A small bipolar bladelet core with transverse platform, desilicified and broken.

A <u>divers</u> scraper, made on a bipolar bladelet core, also with transverse platforms, and there is a third platform. The initial preparation made what is in effect a denticulated steep-scraper with sharply spurred outline; this edge appears to be utilised.

A retouched flake: the butt of a brown, thin flint flake with fine abrupt retouch on the break.

Two crested guide-flakes, one white-patinated and one of brown flint.

One core-tablet of glossy skewbald flint. It has a finely faceted butt and a ridge which represents the junction of the old core base with its flaking-surface. A negative scar on the base of the original core now shows on the upper surface of this flake, which is 0.8cm. thick.

Four unretouched bladelets, only one of which is small and typical, the others being broader; all have minute butts.

Eight retouched blades, the largest complete one measuring 6.1 x 1.3 x 0.3cm., two with cortex and all with punctiform (some offset) butts; four are incomplete, and about half are white-patinated.

Eleven unretouched flakes and fragments of flakes (butt ends), almost all are white-patinated and slightly broken.

One possible burin spall.

Thirteen pieces of débris; half are chunks and the rest are desilicified small fragments, possibly of flakes. One chunk has been burned.

INVENTORY OF BRECCIA BLOCK BBc

	Sub-type	Class total
Cores	2	2
Tools:		
End-of-flake scraper	1	
Burin/notch composite	1	
Flat-faced carinated burin	1	
Double burin/carinated end-scraper composite	1	
Notched and utilised flake	1	
Flake with abrupt retouch	1	
Divers scraper	1	7
Débitage:		
Core-tablet	1	
Crested blades	2	
Burin spall	1	
Unretouched bladelets	4	
Unretouched flakes and fragments	8	
Unretouched blades and fragments	12	
Débris	13	41
Total		50

REMARKS

BBc seems to represent a typical occupation horizon, 68% of the unit consisting of unretouched blades and flakes, and 6% consisting of cores. Of the four tools, three are burins, two of which are carinated - a type characteristic of Aurignacian A-C phases in the Levant. The predominance of burins can hardly count as significant in such a small sample, but one might make a tentative comparison with either the burin-dominated levels 13-11 (or Aurignacian A) at Ksar Akil, or the Aurignacian C level 7, where (as Dortch has shown) carinated burins show a marked increase. Desilicification seems well advanced in the smaller pieces in BBc, but about half this unit consists of fresh flint artifacts with sharp edges. Asymmetrically placed butts ("offset débitage") occur on blades as well as flakes.

ARTIFACTS FROM THE BRECCIA BLOCK BBAbd

All seven pieces recovered from this block are at Cambridge and can be described as follows:

Plate A.4, no.10. Composite end-of-blade scraper, opposed to a dihedral burin on a break, made on the butt of a chert cortex

blade. One lateral edge shows slight retouch or possible use damage on the lower surface.

Plate A.4, no.8. Double carinated burin on a thick flake of beige flint, which might originally have been part of a core. One edge has abrupt backing 0.7cm. thick, the other is retouched by fine nibbling. One end of this tool is a carinated flat burin 1.5cm. thick, where 3 oblique facets are opposed to a natural surface. At the other end is an axial dihedral burin, 0.7cm. thick, with two facets opposed to one, the length of which is limited by slight lateral retouch. Compare with a piece from Antelias Cave (Copeland and Hours, 1971, Plate 5, no.10) and see Newcomer, 1971, Fig.7, no.6.

An unretouched blade, broken distally, with a recently made notch on one edge; the butt is plain. Pale beige chert.

A notch on a flake of skewbald, desilicified flint with plain butt, broken distally.

A burned chunk, grey and concreted.

A blade of white desilicified flint with plain butt.

A burin spall of brown flint.

INVENTORY OF BBAbd

Cores	-
Tools: (1 scraper, 1 burin, 1 notch)	3
Débitage	4
Total	7

REMARKS

Small as it is, this unit equates well with the material and types found in the larger samples, and the carinated burin indicates that it belongs to the Aurignacian period. Fewer pieces are desilicified than was the case in the other units.
This concludes the description of pieces from layers and breccias considered to be in situ (Group I), a total of 259 artifacts.

GROUP II: UNSTRATIFIED MATERIAL

It was discovered that the Neolithic pit infilling, as well as other disturbed areas in the cave, contained numerous Upper Palaeolithic artifacts. Since the in situ samples were so small, it was considered useful at least to study these unstratified artifacts typologically, and those most representative were set aside for donations to institutions as typology collections. The material was separated by Professor Garrod from the other mixed artifacts on the basis of their typology, style and patina, and by comparison with the in situ pieces and those of other known Upper Palaeolithic sites. This writer has studied the Group II pieces with a care equal to that applied to the Group I units, since it seemed likely that they would help to confirm the character of the industrial phase represented by Bezez A.

The contexts and artifacts consist of the following:

TRENCH S, LAYERS 99, 101-105

This is the swallow-hole, described in Chapter 3, pp.32-33, at the edge of which the layers broke off, spilling their contents, mixed, into the centre. Twelve of the 56 pieces selected (listed in Table A.2) are at Cambridge, and one, a unipolar bladelet core on tabular chert, is illustrated in Plate A.4, no.3. The majority are white-patinated or desilicified.

TRENCH K, LAYERS 4-6

Neolithic pit infilling. Six of the 66 pieces listed in Table A.2 are at Cambridge; one, an end-scraper on a blade with very thin distal end, is shown in Plate A.1, no.12. The six burins are an interesting group, comparable to those of the Group I units; the beaked specimen is without a stop-notch.

TRENCH G, LAYERS 30-36 AND BAULKS D/G AND G/K, LAYER 30

Neolithic pit infilling. From the 104 selected pieces, 57 were sent to Cambridge and those drawn are described as follows:

Plate A.4, no.1. Double end-scraper on a blade, the proximal frontal quite flat, the distal one having a naturally abrupt back (G30).

Plate A.4, no.2. Conical bladelet core (re-used as a steep-scraper?) with refreshed platform (G30).

Plate A.3, no.1. Flat-faced carinated burin, whose beaked appearance is due to an abortive vertical blow. The working edge is rounded, formed of four spall-removal facets opposed to one; (a) and (b) on the drawing show alternating retouch on the lateral edge. White-patinated flint (G/K30).

Plate A.3, no.2. Composite: an offset dihedral burin (two facets opposed to three, on a crested guide-flake) opposed to an atypical nosed scraper (not shown on drawing but formed in a 1.4cm.-wide semi-circle, the facets struck directly from the flake-surface) (G/K30).

Plate A.3, no.3. Partially backed blade with feathered-out distal end which simulates a <u>chanfrein</u>. Morphologically unlike "Emiran" <u>chanfreins</u>, it is very thin and has a minute linear butt. Unpatinated chestnut flint (D/G30).

Plate A.3, no.4. Offset dihedral burin, grading to a carinated burin. Skewbald flint (G/K30).

Plate A.3, no.5. End-scraper on the end of an irregular blade with faceted butt; the working end is much undercut, i.e. refreshed. Skewbald flint (G/K30).

Plate A.3, no.6. Atypical end-scraper on a crested guide-flake, selected because its distal end simulates that of a <u>chanfrein</u>. The '<u>chanfrein</u> facet' seems however to be the result of core-preparation; it has a punctiform butt and two patinas. Classed as type B2a on Hours' (1974) typelist (G30).

Plate A.3, no.7. Flat-faced carinated burin, grading to a dihedral, on a burned grey flint flake; the blank seems to be a core-refreshment flake (G30).

Plate A.3, no.8. Bipolar bladelet-core with facets on each removal surface twisting in opposite directions; each is 1.8cm. wide, and semi-circular (G30).

Plate A.3, no.9. Plunging-blade of white-patinated flint (G/K30).

Plate A.3, no.10. Unipolar core on a flat pebble (G/K30).

The majority of the remaining eleven end-scrapers, four burins, with various core-tablets, crested blades, cores and flakes are typically Aurignacian and most are white-patinated. In summing up, one could comment that five of the end-scrapers have a marked droop at the working end, the chanfrein-like pieces do not suggest an Emiran context, and that one blade with irregular flat, scalar retouch resembles pieces classed as Aurignacian blades at Antelias (Copeland and Hours, 1971, Plate 15, no.9).

'VICTORIA CAVE', LAYERS 197-199 AND 201-203

Any originally in situ material here had been disturbed in antiquity by burrowing animals. Of the 95 pieces selected, 33 are at Cambridge and the drawn pieces are as follows:

Plate A.5, no.7. Nosed scraper with carinated profile and twisted facets. White-patinated (V201).

Plate A.5, no.8. Atypical nosed scraper, the working-end considerably under-cut, on a denticulated, white-patinated cortex-flake (V197/8).

Plate A.5, no.9. Axial dihedral burin on a core-tablet. Two patinas (V197/8).

Plate A.5, no.10. Axial dihedral burin on a bladelet core (a cylindrical nodule, broken, with the break used as a striking-platform). Compare with a similar piece in Plate A.5, no.9 and pieces from Mount Carmel, e.g. el-Wad C, Garrod and Bate, 1937, Plate XVI, no.1 (V198).

Plate A.6, no.11. Bladelet core with refreshed platform. Skewbald flint (V198).

Plate A.5, no.12. Carinated steep-craper with semi-circular working-end and twisted facets; one refreshment facet is struck transversally along the base/flaking-surface angle (V197/8).

The remaining pieces included quite large burins and end-scrapers of Levantine Aurignacian A to C typology, mostly white-patinated.

DIVISION I

This material came from the upper layers of the Neolithic pit infilling, excavated by the Department of Antiquities under their foreman, Abdullah. The pieces are marked either "Bez.Abd.Mix" or "Bez.Abd.'63". Forty-nine of the 189 pieces selected are at Cambridge, and the five drawn pieces are described as follows:

Plate A.5, no.1. Double carinated burin, passing to a composite carinated scraper/carinated burin, the lower working-end forming a horse-shoe edge (not shown in the drawing). Classed

as a burin because the facets are struck off on to the thickness of the blank, a tabular slab.

Plate A.5, no.3. End-scraper on an Aurignacian blade, white-patinated, with pronounced curve in profile. One lateral edge has abrupt, the other semi-abrupt, retouch. Compare with similar specimens, e.g. from Kebara D2 (Garrod, 1954, Fig.7, no.5, or Fig.10, no.1 from D1).

Plate A.5, no.5. Double axial dihedral burin on an abruptly-backed Aurignacian blade. See similar pieces illustrated by Newcomer from Ksar Akil (1972, Figs.32, no.9 and 44, no.7). Glossy white flint.

Plate A.5, no.6. Backed bladelet with semi-abrupt retouch; burned, mottled flint.

Plate A.4, no.6. Bipolar blade-core in skewbald flint. The second flaking-surface is just seen in the drawing, upper right, transverse to the face shown.

Of the remaining pieces, the end-scrapers in particular are varied typologically, but stylistically they are of Aurignacian aspect; all can be matched with specimens at e.g. el-Wad D, Kebara D and E and in the Levantine Aurignacian levels at Ksar Akil. Some droop at the working end. Some of the burins have stop-notches.

MISCELLANEOUS FROM SECTION-CLEANING

Of the 111 pieces selected, seven are at Cambridge. They are consistent with the typology and technology of the other units, with the exception of one end-scraper, which is made on Kefraya flint and so could be Neolithic. None is illustrated here.

REMARKS ON GROUP II CORES

In addition to the pieces discussed above, large numbers of blade- and bladelet-cores were selected, the majority of which remain in Beirut. These are typically Levantine Aurignacian in style and technique, and were classified in great detail in the Field Register into types based on: number of platforms, size, form of frontal such as steep, semi-steep, oblique etc., and edge-form in plan, such as broad, narrow or straight, round or pointed. It was also noted whether the removal facets were twisted in relation to the axis or straight. Not all of these divisions have been repeated in the list of core-types in Table A.2, and not all of the material still in Beirut has been classified as to sub-type; in cases where core sub-type is not mentioned in the Field Register, it is listed on Table A.2 as 'not described'.

ANALYSIS OF THE ASSEMBLAGES

In Table A.2, the material has been divided into two, Group I consisting of material from layers in place and the material from the breccia blocks, and Group II of material from mixed units. As has already been said, units in Group II are selections which consist of artifacts picked out typologically and there is no stratigraphic proof that they are actually of Upper Palaeolithic age, while, even though they are small and incomplete as artifact

Category (Hours' List)	List of types / Units	GROUP I: G40	G42	D252	BBk,BBl	Bez.'58	BBc	Breccia Bez Abd	Group I Totals	GROUP II: S	K	V	G	Section Cleaning	Division I	Group II Totals
B1a	Short end-scraper, typical	1				1			2	1	1		4	2	9	17
B1b	Short end-scraper, asymmetric						1		1						1	1
B1c	Short end-scraper on retouched blank					1			1							
B2a	Long end-scraper, typical	2	1			2			5	2	2	4	9	8	17	42
B2c	Long end-scraper with a notch												1	1		2
B2e	Long end-scraper on Aurignacian blade			1					1							
B4a	Flat shouldered end-scraper					1			1					1		1
B5	End-scraper on Aurignacian blade														1	1
B6a	Double end-scraper, long														2	2
B6b	Double end-scraper, short				1				1				1	1	1	3
B6c	Double end-scraper, alternate			1					1							
B7a	Carinated scraper, typical											1	1	3	5	10
B7b	Carinated scraper, atypical		1			1			2			1				1
B7e	Carinated scraper, nosed			1	1				2			2				2
B8	Double carinated scraper	1							1						1	1
B9	Non-end-scraper on a flake															
B13	Double mixed (end-, carinated)					1			1				1		1	2
B14	Divers (incl. Inverse etc.) and "not described"						1		1						2	2
15	Massive scraper or rabot												1			1
D1a-c	Single-blow burin														3	3
D2a	Dihedral burin, axial					1			1	1	1	4		3	6	15
D2b	Dihedral burin, offset					1			1	1	1	1	1		2	6
D2c	Dihedral burin. transverse															
D3a	Right-angle dihedral, typical									1						1
D3b	On a break		1						1							
D3c	On the butt									1					2	3
D4a	Multiple dihedral burin														1	1
D4b	Multiple dihedral carinated							1	1	1	1				1	3
D5	Carinated and beaked burin			1		1			2	2	2		1	6	3	14
D6	Flat-faced carinated burin	1					1		2				3		1	4
D7b	On normal concave trunaction											1		2		3
D7d	On oblique concave truncation											3	2		1	6
D12	Multiple mixed burin												1			1
D13	Divers, Unclassifiable											3	1		6	10
E	Perforators												1		1	2
F2	Atypical backed piece											1				1
G	Truncation												1			1
H2	Notch	1	1			1	1	1	5			1				1
H3	Denticulate					1			1							
J1a	Flake with direct cont. ret.						1		1							
J1b	Blade with direct retouch					1			1			2	3		1	6
K1a	Composite: dihedral burin/ end-scraper		1					1	2		1					1
K1c	Dihedral burin/carinated end-scraper						1		1							
K2e	Dihedral truncated burin/ notch						1		1			1	1			2
M4a	Abruptly backed bladelet	1							1						2	2
M7a	Abruptly backed and truncated bladelet	1							1							
	Tool totals	8	5	4	2	13	7	3	42	10	9	25	33	27	70	174
Non-tools:																
Unretouched flakes		7	9	1		14	12		43		1		2	4	4	11
Unretouched blades		14	9	5		22	8	2	60	11	34	27	37	38	64	211
Unretouched bladelets		30	5	5		17	4		61	13	1	4	6	12		36
Crested guide-flakes, blades							2		2				8	1	9	18
Core-tablets			1				1		2		1		4	1	1	7
Burin spalls							1	1	2		1		1		1	3
Other by-products																
Cores: unipolar		13		1		6	1		21	17	16	31	12	20	28	124
bipolar				1		2	1		4	1		5	1	4	3	14
other		1				1			2	4	3	3		4	9	23
divers or not described				1		5			6							
Fragments and débris							13	1	14							
Non-tools sub-total		65	24	14		67	43	4	217	46	57	70	71	84	119	447
Grand total		73	29	18	2	80	50	7	259	56	66	95	104	111	189	621

Table A.2: Typological analysis of Bezez A material.

Hours' Class	Type: Short list	Layers in place G40, G42, D252	Breccia blocks BBk, BBl, BBc, Bez.'58 Bez,Abd.	Class Totals
	Tools:			
B	End-scrapers on flakes	1	4	
	End-scrapers on blades	4	3	
	Nosed scrapers	1	1	
	Carinated scrapers	1	1	
	Double scrapers	2	2	20
D	Dihedral burins	1	2	
	Carinated burins	1	1	
	Flat-faced carinated burins	1	1	
	Double burins		1	8
K	Composite burin/end-scrapers	1	3	4
H	Notches	2	3	
	Denticulates		1	6
J	Various retouched pieces		2	2
M	Backed and truncated bladelet	1		
	Retouched bladelet	1		2
	Sub-total: tools	17 14.2%	25 18.1%	42
Non-tools:				
Unretouched flakes		17	25	
Unretouched blades		28	32	
Unretouched bladelets		40	21	163
By-products		1	5	6
Fragments and débris			14	14
Cores, blade/bladelet		15	11	
Cores, other		2	5	33
Sub-total: non-tools		103 85.8%	113 81.9%	216
Totals		120	138	258

Table A.3: Level A: Abridged typological inventory of material from Bezez A layers in place and breccias.

sets, the Group I units can at least be regarded as valid from the archaeological point of view. It is more profitable, therefore, to base our study on the Group I artifacts, few though they are.

As would be expected from a post-Transitional Upper Palaeolithic assemblage in the northern or central Levant (see below), in Group I, the largest categories are bladelets, followed by blades, flakes and unipolar blade/bladelet cores, in that order. Waste material outnumbers tool types by about sixteen-to-one and the tool/waste ratio is similar in each group. Although the number of tools is small, it is significant first that the two largest groups are single and double end-of-blade end-scrapers (11) and flake end-scrapers (5), and second that the scrapers outnumber the burins. The next most common types are: nosed and carinated scrapers (4), composite burin/end-scrapers (4), and denticulates (5). The two carinated forms of burin (4) just outnumber the normal dihedral burins (3).

In Table A.3, the Group I units are sub-divided into two blocks; since the totals of each block (120 and 138) are comparable, this assists in internal comparisons, although it must be stressed that there is no guarantee that the units in each sub-group are contemporary with each other.

It is at once clear that the components of each group are virtually identical. However, the layers (G40, G42, D252) have three times as many scrapers as burins, while only two-to-one scraper/burin ratios occur in the breccias. In both groups, the bulk of the material consists of unretouched pieces, especially bladelets and blades. Bladelets appear to be markedly fewer in the breccias; in contrast, the breccias have a relatively large number of fragments, probably the result of difficulties in extraction. It is likely that a fair number of fragments of bladelets could not be collected, and it may well be that the number of bladelets in the two groups was originally broadly similar.

Turning to the Group II list, we may note that blades rather than bladelets dominate the unretouched categories, and blade/bladelet cores are very abundant in the collections (perhaps because they are so easily recognisable). As in Group I, end-scrapers on blades and those on flakes dominate the tools selected. The forms of scraper considered to be most characteristic of the Levantine Aurignacian are relatively less common.

It is difficult to evaluate the burins of Group II, since many of the pieces at Beirut have not been classified into sub-types. Perhaps significantly, although there is a large sample and therefore more variety, there are again relatively few "Aurignacian" types: for example, there are only four flat-faced carinated burins, at least among the specimens studied by this writer.

With such small samples, little more than this can be read into the figures, but a Levantine Aurignacian context is suggested by the components of Group I units. Although el-Wad points and Aurignacian blades appear to be missing, carinated burins and scrapers, and nosed scrapers are present as typical forms. In the case of carinated end-scrapers and carinated burins, these are the

forms present on the majority of double and multiple tools, as can be seen from the typelist, Table A.2.

COMPARISON OF BEZEZ A WITH THE LEVANTINE AURIGNACIAN

1. TYPOLOGICAL AND TECHNICAL COMPARISONS

Several technical and stylistic features known to be present in Levantine Aurignacian assemblages can be seen at Bezez in both Group I and Group II: one is the curvature in profile and plan of the blades, which derives from the kinds of cores used. Two basic types of cores for blades occur in the Levantine Aurignacian: single platform (unipolar), of which there are several forms (narrow front, broad oblique front etc.) and the bipolar or double-platform core, again with variations such as platforms on the same plane or axis, and platforms on opposing faces; in the latter case, the products may be struck off from two different directions (crossed axes). For all the blade or bladelet cores, the flaking surface is usually carinated and the facets usually twisted; the products accordingly have a marked curvature both in profile and in plan (Plate A.3, no.9). Professor Garrod called attention to these 'twisted nose cores' (1954; see also the inventories, above). In Bezez, cores of the kind described occur abundantly (Plate A.1, nos.3 and 6); other kinds of core, such as those for flakes (polyhedric, globular or Levallois types) are rare or absent, both in Group I and in Group II, which argues for a real absence of these categories and not one due to selective collecting.

A rather curious trait seen in most Levantine Aurignacian assemblages is an abundance of bladelet cores accompanied by a good number of unretouched bladelets, while there are relatively fewer retouched tools made on the bladelets struck from the cores than would be expected; Bezez A is no exception. The only two retouched bladelets found at Bezez are typical, in that they have punctiform or minute linear butts, and are curved both in profile and plan.

A technical attribute seen at Ksar Akil in level 13, where the Levantine Aurignacian begins, and in the following levels, has been referred to by M. Newcomer as "offset débitage (1972; 1970, Fig.8 no.7); this is explained on p.336, above. It could represent a technique of blade and bladelet production peculiar to the Aurignacians and their descendants, but this needs more study. It certainly does not occur in all Upper Palaeolithic facies and it is therefore of interest to note its presence in all units of Bezez A, e.g. Plate A.2, nos.3 and 14.

One more characteristically Aurignacian attribute at Levantine sites may be mentioned: the propensity of the knappers to utilise the more formal classes of by-product as blanks for tools. Thus, end-scrapers and burins are frequently made on core-tables (Plate A.5, no.9), on crested guide-flakes (Plate A.4, no.6) and on core-preparation flakes with cortex (Plate A.4, no.10). It is true that the Aurignacians are not entirely alone in this, but we see it as a characteristic to be added to the others when evaluating an assemblage, and it is certainly present in the tools of Bezez A (Plates A.2, no.11, A.1, no.2, plus the examples just quoted). In the opinion of this writer, the Aurignacians in the Levant also

habitually utilised plunging flakes as blanks for end-scrapers; this might explain many instances of the frequently-seen droop at the distal end of end-scrapers (Plates A.5, no.7 and A.1, no.9), which in some specimens is quite marked, though no doubt it could also arise as another form of curvature deriving from the particular Levantine Aurignacian knapping techniques. Although the profiles of the end-scrapers have not always been drawn, this feature is common in Bezez A end-scrapers, particularly in Group II where there are many examples. In profile, the tip droops by as much as 40° away from the axis of the blank in 4 pieces in G30, but on many specimens the curvature makes the true axis impossible to measure.

Although the above comments are generalisations, they undoubtedly tend towards the conclusion that the Bezez A material belongs to one very distinctive cultural tradition - that of the Levantine Aurignacian. There remains the question as to whether it belongs to one, or to more than one of the Aurignacian phases of the region listed above on p.334.

2. CHRONOLOGICAL COMPARISON

Because the levels at Bezez have been affected by subsidence and other post-depositional factors already mentioned, the stratigraphy cannot be used to date the Upper Palaeolithic of Level A. The wall breccias, however, do contribute the information that an Upper Palaeolithic occupation occurred at Bezez when the deposits had reached elevations of 18-20m. above sea-level, and also that these levels must have once overlain (whether directly or not) Levalloiso-Mousterian layers later than those found in place in the excavation trenches.

The placement of the Bezez A material within the Levant Upper Palaeolithic sequence must therefore depend almost entirely upon the typology and technology of the artifacts, which can be compared with that in other sites of the period. The divisions of the Levant Upper Palaeolithic (listed at the beginning of this section of Chapter 4, p.334) will be considered in turn in order to find the best match.

a. <u>The early Upper Palaeolithic</u>

It seems clear that the industries prior to the Aurignacian can be ruled out. These have a distinctive, almost Middle Palaeolithic technology, and in the case of the Ksar Akil Phases A and B, equally distinctive tool-types, such as <u>chanfreins</u> (which were described on page 336 above), truncation burins and burins on lateral preparation (in Phase A), backed pieces and robust points (in Phase B); for details see Azoury, 1971; Copeland, 1970; Waechter, 1976; Bergman, 1981. All this is absent in Bezez A. The few atypical pieces with distal chamfered facets are, by themselves, quite insufficient to suggest an early Upper Palaeolithic context. In any case, as mentioned, occasional <u>chanfreins</u> can occur, if only rarely, in the later Ksar Akil levels; and one was reported from Hayoum D (Belpher-Cohen and Bar Yosef, in press); isolated specimens have even been reported from Neolithic levels, e.g. at Jericho (Bar Yosef, 1970). Although

without *chanfreins*, other early Upper Palaeolithic assemblages, such as Erq-al-Ahmar F-E (Copeland, 1976) or Boker Tachtit Level 1 (Marks, 1981), do have the relict Middle Palaeolithic technology, and this is simply not the case with Bezez A.

b. Epi-Palaeolithic industries

Similarly, industries later than the Levantine Aurignacian can be ruled out because they are always dominated by retouched bladelets of various well known types, and these are absent at Bezez. Although some Aurignacian traditions perhaps continue into the Epi-Palaeolithic, it has been shown that Kebaran assemblages contain more retouched microliths than any other tool or type (Bar Yosef, *ibid.*; Copeland and Waechter, 1968; Tixier, 1970).

c. Levantine Aurignacian A

For some years this poorly represented phase was thought to occur only in the northern Levant at Ksar Akil levels 13-11 (Azoury, 1971), i.e. below the main Aurignacian (Phases B and C) levels. At Ksar Akil, burins are the dominant tool-form in this phase; el-Wad points and retouched pointed blades and bladelets are present, but end-scrapers are rare. All the stylistic traits of the Aurignacian are evident including the flat-faced carinated burins - and in this respect the Ksar Akil facies differs from the Ahmarian assemblages of the Negev (Marks, 1981) in which, although the el-Wad points, blade tools, bladelets and bladelet cores are present, the typically Aurignacian burin and scraper types do not occur, or occur very rarely indeed.

A good number of the Bezez A burins have stop notches; this attribute appears at Ksar Akil in levels 13-11 and is evidently characteristic there of Levantine Aurignacian A. However, it would appear from discussions with M. Newcomer that the stop-notches on the Bezez A specimens take the form of battering retouch at the end of the spall removal facets, rather than of clearly defined notches, such as are seen at Ksar Akil. The evidence can hardly count as sufficient by itself to date Bezez A to the first Aurignacian phase of Ksar Akil and may merely reflect a local peculiarity at Bezez. In summary, if we compare the Bezez A material with the foregoing brief account of the Levantine Aurignacian A, we cannot conclude that it certainly belongs to that phase; it does not appear to correspond to the more southerly Ahmarian facies either.

d. Levantine Aurignacian B

This is perhaps the best documented and most widespread Levantine Aurignacian phase. To the north, it appears at Abu Halka in Level IVc (Haller, 1946), at Ksar Akil in levels 10-8 of Ewing (Waechter, 1976) and probably in Phase VII (and perhaps VI) of Tixier and Inizan (1981), as well as Antelias levels IV and III (Copeland and Hours, 1971). To the east, it occurs in the middle levels of Yabrud Shelter II (Ziffer, 1981) and in central Israel there are several sites such as El-Wad in E and D2 (Garrod and Bate, 1937), Kebara (Ziffer, 1978b) and Erq el-Ahmar B (Neuville, 1951), to mention only three. The industry is dominated by flake-

tools, mainly short and thick forms such as carinated and nosed scrapers, fashioned by delicate lamellar and fluted retouch; carinated burins and other burin types are numerous; tools made on bladelets (el-Wad points) and blades are also present (see Tixier and Inizan, 1981, Tableau 1 for counts at Ksar Akil), and are made by a core-reduction technique different from that used to produce the flakes. In the southern Levant, a variant has been distinguished in the Negev sites where the blade/bladelet component is especially sparse (Marks, 1981).

Several workers have hesitated as to the dividing line between this phase and the next (Phase C), for example at Ksar Akil (before or after level 8?) and Kebara (before or after D2?). At the former site, Dortch (1970) regarded level 8 as forming a continuum with level 9, while Waechter (1976) regarded it as related to level 7 and hence a Late Aurignacian (or Atlitian). We mention level 8 because of its C14 date of 26,890±380 B.C. (GrN 2195) taken at a depth of 6-7.60m. (Vogel and Waterbolk, 1963). By its position, Ewing's level 8 may correspond to Tixier's level 10, for which there are eight C14 dates from the Monaco laboratory (MC 680-688), giving an average of 25,050 years B.C. If the correlations are correct, level 8 seems more likely to belong to the Levantine Aurignacian B phase than to Levantine Aurignacian C.

So far as this concerns Bezez A, as is obvious from the illustrations, our own material could well relate to that of the B phase as a whole. On the other hand, some typical forms, such as el-Wad points, numerous retouched bladelets, and Aurignacian blades are missing except in the mixed units. This could be taken as an argument against an attribution to the B phase, but the smallness of the sample renders it less telling.

e. Levantine Aurignacian C

This term is somewhat of a catch-all for a series of assemblages which are not typically Aurignacian and yet not Kebaran, and which, at some sites, occur stratigraphically between these two industries.

At el-Wad, Garrod (1954) distinguished an assemblage in level C (later termed Atlitian) which overlay the Aurignacian of D and underlay Natufian levels. She considered it (1957) to be a specialised evolution of her Upper Antelian. In this sense, it could be thought of as a Late or Final Aurignacian. In Neuville's six-phase scheme for the Levantine Upper Palaeolithic, el-Wad C was assigned to his Phase 5, into which he also placed such assemblages as el-Khiyam E (1951, p.178). At Ksar Akil, levels 7 and 6 were considered by Dortch to represent two stages of a Final Aurignacian which was in process of development, apparently without typological breaks, towards the Kebaran of levels 4-1; he viewed level 6 at least as possibly contemporary with the Atlitian of Palestine, but different enough to preclude use of that name at Ksar Akil. Tixier and Inizan (1981) seem to have come to the same conclusion regarding their Phase VI, which appears to correspond broadly to Ewing's level 7, although this requires confirmation.

Elsewhere in the northern Levant, late Aurignacian variants have been reported at Rakefet in level II (Ziffer, 1978a), Hayonim in D (Belpher-Cohen and Bar Yosef, in press) and Yabrud Shelter II, upper levels (Ziffer, 1981). Although there is little industrial uniformity to be seen among all these assemblages, certain features do seem to recur: abundance of bladelet cores without a corresponding number of tools made on bladelets, although a good number are present; abundance of carinated and nucleiform burins; presence of typical Aurignacian scrapers, though these are less common than in the B phase, as are forms considered exclusively Aurignacian such as Aurignacian blades and carinated scrapers; tools made on flakes are generally less numerous than those made on blades.

Except perhaps at Hayonim, 'Ahmarian' characteristics do not seem to occur; at Ksar Akil, the meticulous excavations of Tixier show that the scraper and burin component occurs in the same levels as the retouched blade and bladelet component. The studies of Ziffer (1981) at Yabrud II indicate that the same can be said of levels 6-2 there (thin layers separated by hearths).

As we have seen, all the typological features mentioned above are present in Bezez A, and it would seem that the typology of this 'Late' or 'Final' Aurignacian of el-Wad C and Ksar Akil 7 does make it possible to assign Bezez A to this phase, or at least to its beginning; this is because, at Ksar Akil, certain tool-types (burins on a Clactonian notch, Ksar Akil scrapers, for example) which characterise level 6, are not seen in the Bezez A collections, making it less likely that Bezez A relates to Ksar Akil level 6.

THE PROBABLE PLACE OF BEZEZ A IN THE AURIGNACIAN SEQUENCE

To sum up, so far as regional comparisons can be applied to the small Bezez A sample, they suggest to the present writer that, for the following reasons, Bezez A as a whole most probably belongs to the end of Levantine Aurignacian B and the start of C:

a) The only two retouched bladelets would fit well into the range of Aurignacian B or C microliths. One (from G40) is even obliquely truncated, a feature which first appears at Ksar Akil in level 8.

b) The abundance of cores, and pieces intermediate between twisted-nose bladelet-cores, carinated (steep) scrapers, and carinated burins, strongly suggests a Levantine Aurignacian C context.

c) The marked superiority of end-scrapers over burins (sometimes three-to-one), which is a trait of the B phase at Ksar Akil, is not evident in the Bezez A breccia units, where burins are outnumbered by scrapers but only by a ratio of two-to-one. As Dortch has shown, and Tixier and Inizan have confirmed, burins begin to increase at the start of the C Phase. In the Bezez layers, the scrapers are three-to-one over the burins (9 and 3 respectively), which would accord better with a date nearer the B phase, if we can rely on this criterion. With so few tools (32 in all) available with which to judge the proportions of burins versus end-scrapers, not much

more than a suggestion can be made that the Level A layers may predate slightly the breccias, and that the two series belong respectively to the end of the B and start of the Aurignacian C phase. Such as it is, the stratigraphy does indeed indicate that the layers were originally deposited before the breccias; they are certainly located well below the latter today.

d) The absence of the special late Phase C forms (burin on a notch, Dufour bladelet, Ksar Akil scraper), and the fact that short end-scrapers and scrapers on flakes outnumber those on blades, argue against a full or late Phase C context. With only 20 _in situ_ scrapers to consider (24 with the composites), the ratio of blade versus flake as blanks for scrapers would not be reliable, but it is worth noting that the breccia units contain noticeably more flake blades (7 as against 3) than blade blanks, and, furthermore, that all the other tools are made on flakes.

Turning to the mixed units, the possibility that elements of the earlier and later Upper Palaeolithic phases have been included together can neither be established nor ruled out, and no further discussion of the regional context of this material is worthwhile.

Our final thoughts on Bezez A will be found in Chapter 8.

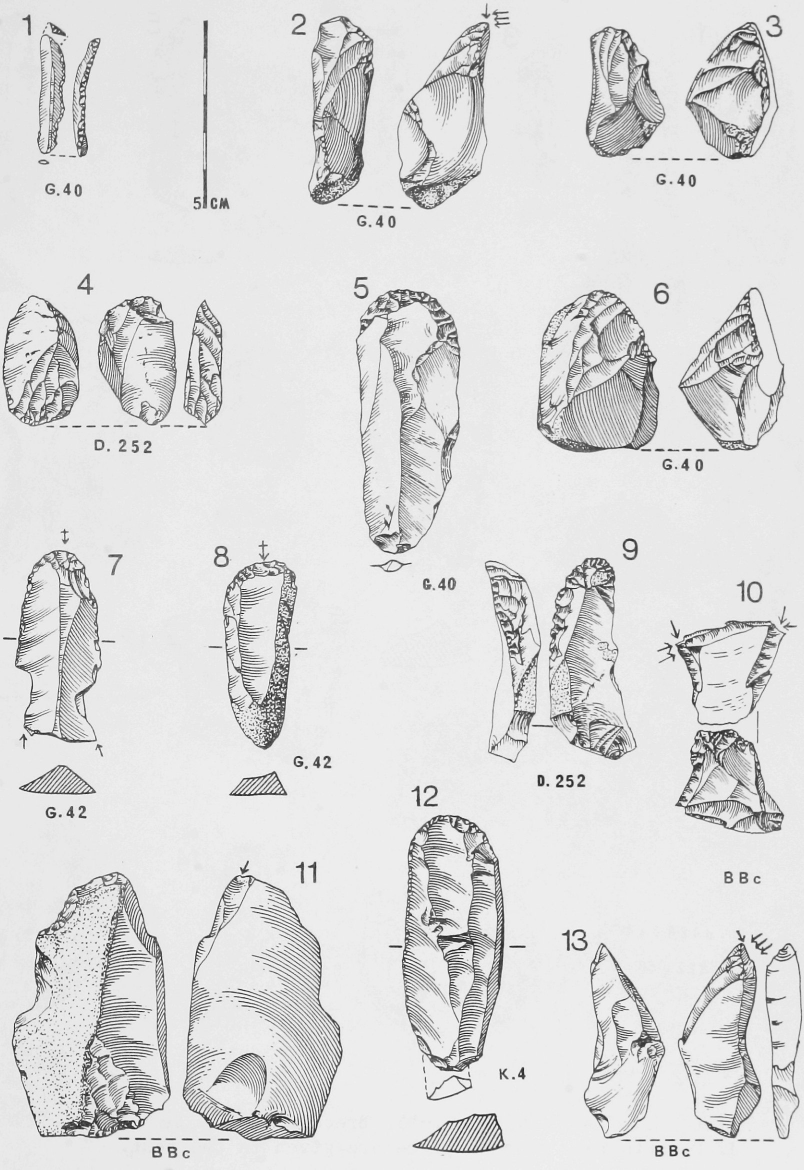


Plate A.1: Level A. Nos.1-3 and 5-6, G40; Nos.7 and 8, G42; Nos.4 and 9, D252; No.12, K4; Nos.10-11 and 13, Breccia Block BBc. All Group I except K4. Descriptions of each piece are given in the text.

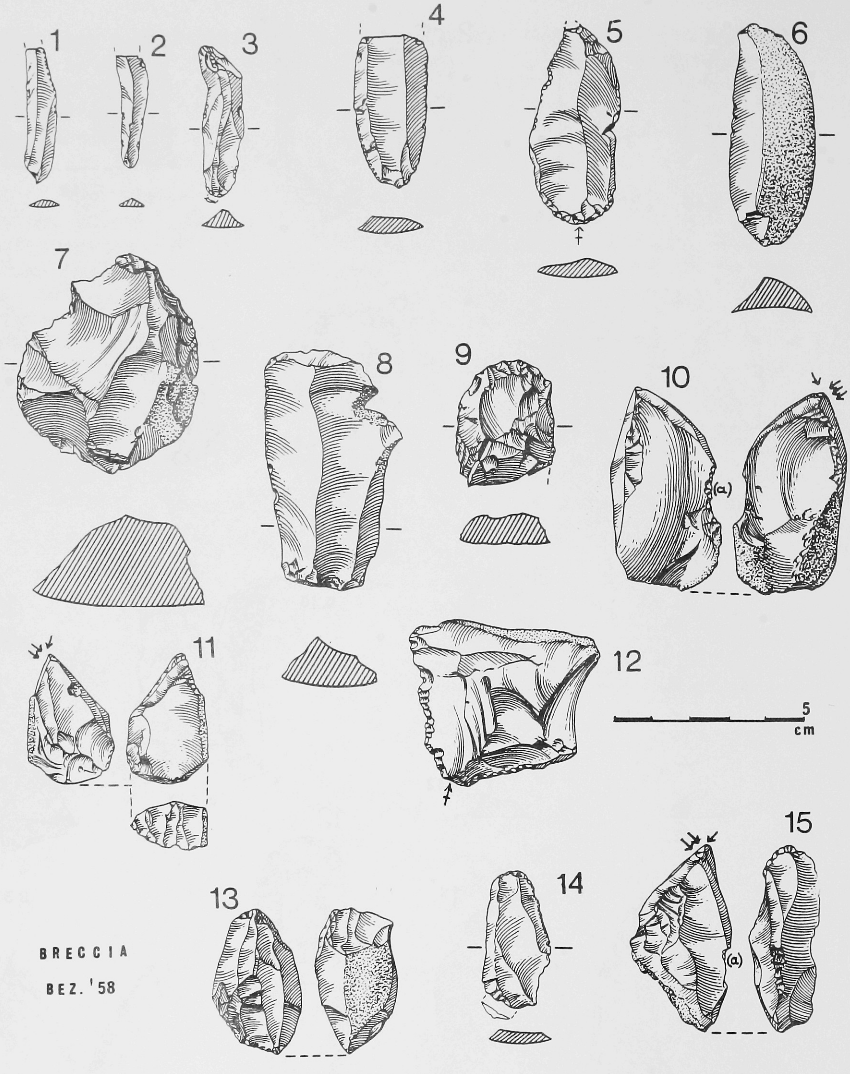


Plate A.2: Level A. Nos.1-15, Breccia Block "Bez. '58". All Group I. Descriptions of each piece are given in the text.

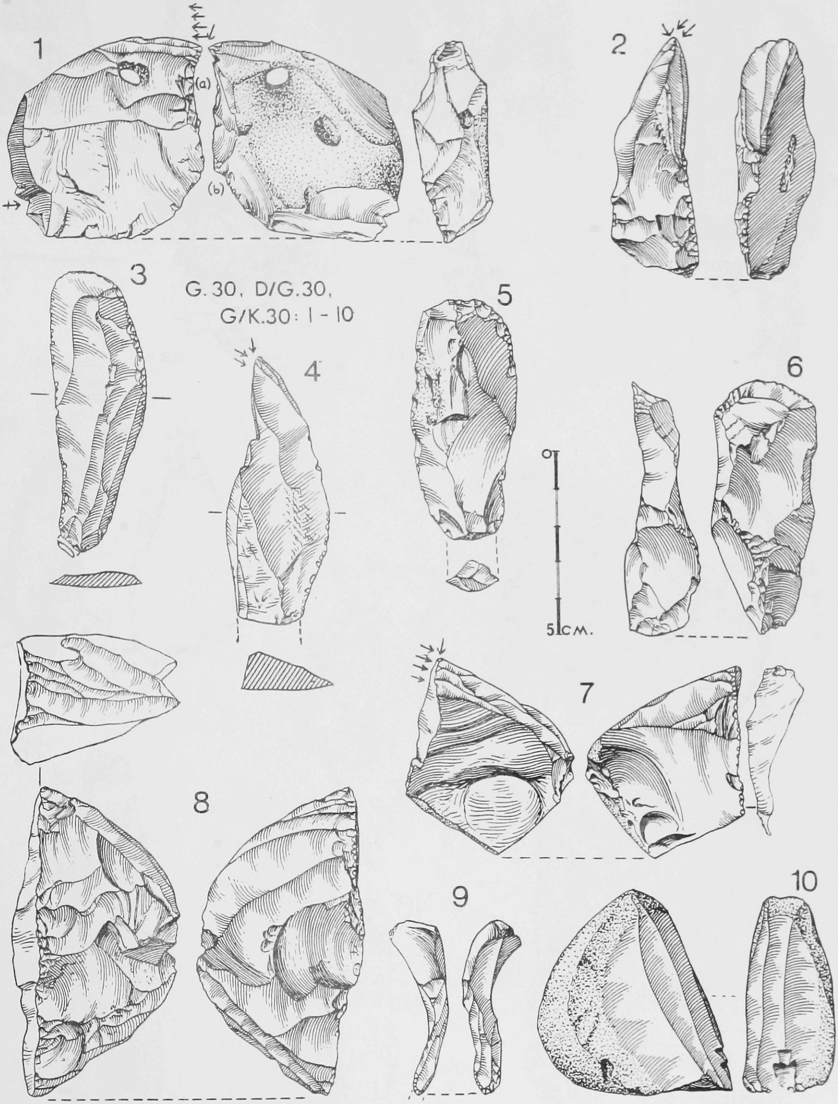


Plate A.3: Level A. Nos.1-10, D/G30 and G/K30. All Group II. Descriptions of each piece are given in the text.

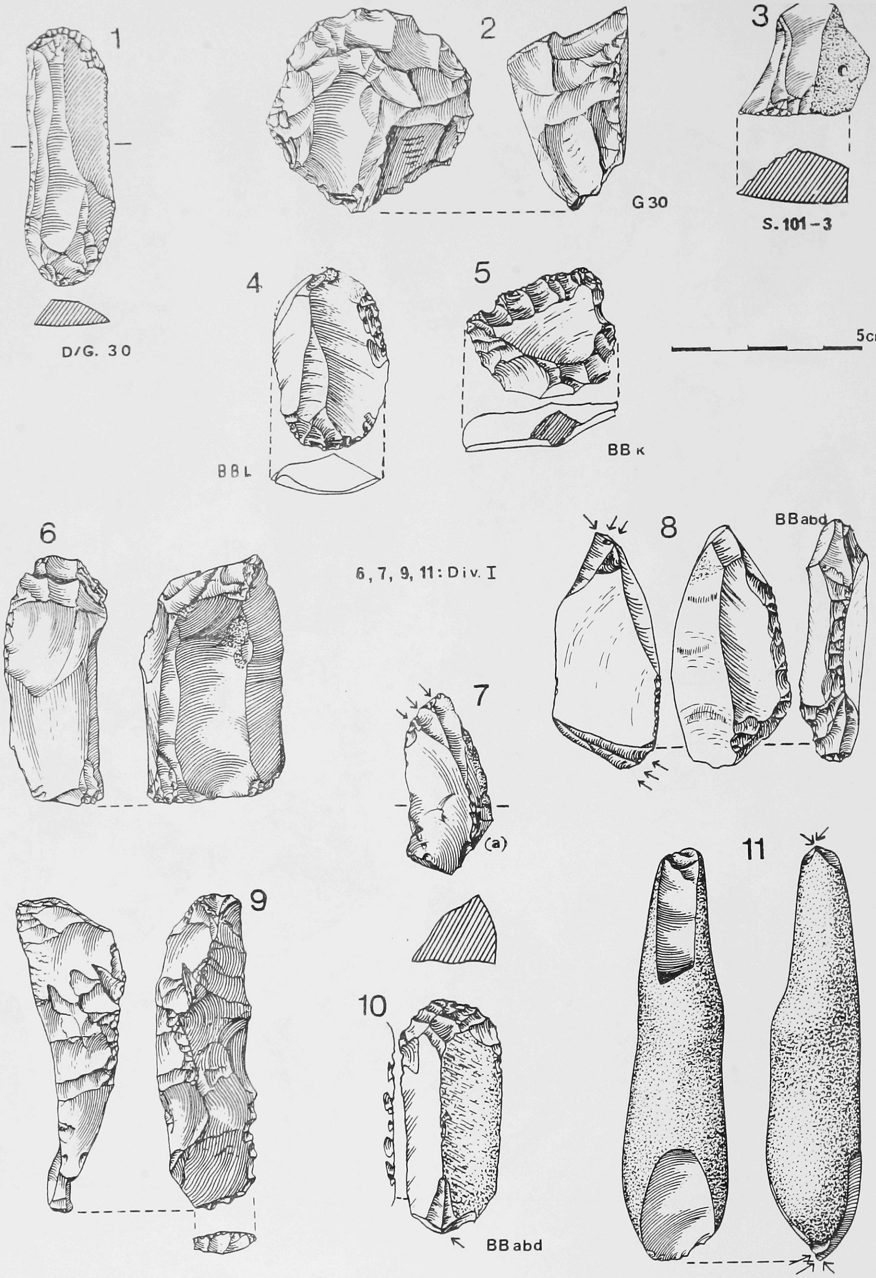


Plate A.4: Level A. Nos.1 and 2, G30 and D/G30; no.3, S101-3; No.4 Breccia Block BB1; No.5, Breccia Block BBk; Nos.6, 7, 9 and 11, Division I; Nos. 8 and 10, Breccia Block BBAbd. All Group II except Breccia Blocks BB1 and BBk. Descriptions of each piece are given in the text.

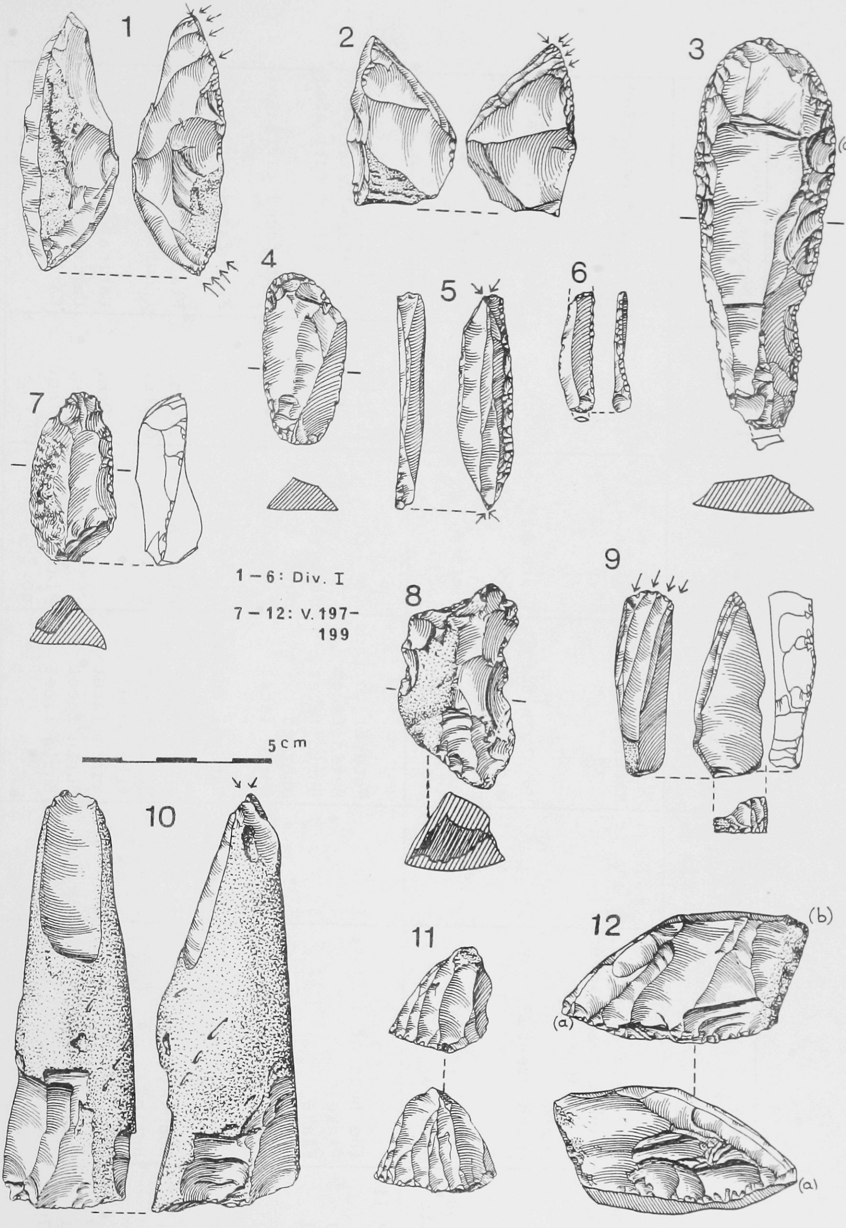


Plate A.5: Level A. Nos.1-6, Division I; Nos.7-17, V197-9. All Group II. Descriptions of each piece are given in the text.

Unit	Blank	Number of carinated facets	Type of spall-removal surface	Illustrations	Width of burin edge	Sub-type
GROUP I:						
Bez.Abd breccia	Thick flake or chunk opposed to an axial dihedral burin	3	Natural surface	Plate A.4, no.8	1.3cm.	Flat-faced carinated (double)
G40	Rough crested flake	3	Mainly natural, with a burin facet one side	Plate A.1, no.2	1.5cm.	Flat-faced carinated
Bez.'58 breccia	Flake with two patinas	3	Burin facet	Plate A.2, no.10	1.0cm.	Carinated
GROUP II:						
S105	The butt of a flake	3	Natural surface		1.2cm.	Flat-faced carinated
G/K30	Flake	4	Burin facet		1.6cm.	Flat-faced carinated
G/K30	Flake	4	Burin facet, aborted	Plate A.3, no.1	1.5cm.	Flat-faced carinated
G/K30	Rough flake; burned	4	Burin facet	Plate A.3, no.7	1.4cm.	Flat-faced carinated
Div.I	Cortex flake	3	Natural surface	Plate A.4, no.7	1.6cm.	Flat-faced carinated
Div.I	Nodule; double burin	1) 4 2) 4	Burin facet Burin facet (the same)	Plate A.5, no.1	1.0cm. 0.9cm.	Flat-faced carinated (double)
G/K30	Core-tablet flake	4	Burin facet		0.9cm.	Carinated
Div.I	Cortex blade	4	Burin facet		1.5cm.	Carinated
Div.I	Nodule	4	Burin facet	Plate A.5, no.2	1.1cm.	Carinated

Table A.4: Attributes of thirteen carinated and flat-faced carinated burins from Bezez A.

APPENDIX E

LEVEL A BURIN TYPES

In the above analysis, much has been made of the presence of carinated and flat-faced carinated burins in Bezez A. To aid the establishment of the attribute parameters of these artifact types at some future date on a larger sample, the main features of the 12 pieces in Bezez are set out in Table A.4. To enlarge the regrettably small sample, each extremity of the double carinated burin is treated as one specimen, making the total thirteen. Only the first three listed are from Group I. For purposes of comparison, we have relied heavily on the work of M. Newcomer (1972) on the Ksar Akil burins.

REMARKS ON TABLE A.4

a) The surface opposed to the carinated facets is another burin facet in eight cases, and a natural surface in four cases; this proportion is roughly similar to that at Ksar Akil, where, in the Upper Palaeolithic levels, the spall removal surface on carinated and flat-faced carinated burins is in about two-thirds of the cases another burin facet. In one third of the specimens it is a natural surface.

b) Of the thirteen specimens, six have four carinated facets and five have three facets, so that three or four facets form a norm for this group. At Ksar Akil, Newcomer notes that carinated and flat-faced carinated burins most commonly have three facets, but those with four are almost as frequently found.

c) The width of the burin edge is very difficult to measure and to define, especially in the flat-faced sub-type. In general, the measurements were taken half a centimetre in from the tip on the vertical spall removal surface. On present evidence, the width on the Bezez pieces averages slightly more (1.2cm.) than on the 51 pieces illustrated by Newcomer (1972), most of which fell in the range 1.0 - 0.5cm. In this case it might be that the Bezez pieces do not measure up to the apparent norm, either because of their low number, or because the Ksar Akil pieces illustrated were selected for elegance, i.e. thinness.

Nevertheless, the other characteristics of these two burin sub-types at Bezez would seem to be comparable to those of the Ksar Akil specimens. Of course, it would have been preferable to study the two separately, in case they differ in some way not immediately apparent; any such difference might have a bearing on their as yet unknown function.

CHAPTER 5

THE NEOLITHIC OF BEZEZ CAVE
by D. Kirkbride

The Neolithic material occurs in Bezez Cave in two areas: the large, stone-filled central cavity (see Fig.S.1) and the rear chamber known as 'Victoria Cave' or 'Cave V'. All the Neolithic artifacts found must be considered to be out of context. In the case of the central cavity, which occupied most of the main cave, the Division I team had removed all the upper layers, and were already working in the upper part of the stone-fill before Division II took over. The artifacts of Cave V, although of a different patination, had to be separated from the Levalloiso-Mousterian material of layers V197-202 (also out of context) by typology alone.

At the time when the Neolithic newcomers arrived, the deep hollow was filled with loose stones and the soft earth that had filtered down between them, not to mention a very mixed collection of older artifacts and occupation débris, and they were probably obliged to live around the edge of the depression. Later inhabitants in their turn would have kept the level of the accumulating deposit under control by throwing the detritus left by their predecessors into the cavity to make a level surface.

Such a necessity had arisen by the time of the Byzantine occupation, when a hard and flat surface was needed on which to found their lime kiln and other installations. In addition to all this, the hollow has been disturbed by the digging of many pits in the loose fill, some of which date to the present day. The Neolithic artifacts, although disturbed throughout the upper layers of the hollow, were found in particular concentrations in Trenches G and K. Here, the Heavy Neolithic (for discussion of this term see the closing section of this chapter) appeared in quantity at the west end, and a smaller element, mostly consisting of end-scrapers, towards the east end.

THE CLASSIFICATION OF THE ARTIFACTS

The method of classification differs from that used on the Palaeolithic material in Chapter 4 in being far less detailed. The artifacts were studied by the excavators as long ago as 1964 in the National Museum basement in Beirut, under conditions of limited time and space. None could be sent to England for study at leisure, as was the case with the Palaeolithic material. Another difficulty was that, at that time, little or no comparative material was available to assist in the establishment of artifact categories; the extensive collections of Père Fleisch from Heavy Neolithic open sites had not been classified or published, as they were later by J. and M.C. Cauvin (1969). It was therefore inevitable first that the classes of artifacts were chosen intuitively rather than according to some preconceived system and secondly that any overlaps or inconsistencies which emerged later could not be rectified. Nevertheless, of the total of 1613 specimens recovered and studied, we recorded on data sheets the main attributes -

length, width, thickness, type of retouch and class (with subdivisions for variants) - of 1278 artifacts; the remaining 335 rough and fragmentary pieces were not included in the following study. We judge that, in spite of the obvious shortcomings of the study, it would be a grave omission if we did not include its results here.

The Neolithic material is presented in this chapter divided into three groups of specimens, at the wish of Professor Garrod:

a) The 'gigantolithic' or Heavy Neolithic component in the main cave;

b) The 'gigantolithic' or Heavy Neolithic component in Cave V;

c) The 'normal-sized' component in the main cave and Cave V.

This was because both excavators felt that some significant differences between these groups, either in locale or morphology, might emerge if they were formally compared.

The class numbers follow each other consecutively through groups A, B and C; when a class in one group corresponds to one with a different number in another group, this is noted in the text. Not all the numbers were utilised, some having deliberately been kept in reserve: for example, there are no classes 16-19 in Group B.

Such artifacts as could be extracted from the Division I baskets were included in the main cave count, but it is, of course, not known whether these represent all the specimens found. At the moment all the material is in the National Museum, Beirut, although 38 specimens were packed separately, destined eventually for shipment to Europe.

A. THE HEAVY NEOLITHIC ('GIGANTOLITHIC') FROM THE MAIN CAVE

The classes are numbered from 1 to 15.

CLASS 1. Total 55 specimens. TYPE: RECTANGULAR SCRAPERS

DESCRIPTION

Made on very large chert flakes or nodules, mostly chunky, by the block on block method. Secondary flaking probably by a mixture of both stone hammers and wood fabricators, a large amount of cortex being left on most examples. The majority appear to have been used as choppers as well as scrapers.

SUBDIVISIONS

a) Roughly rectangular, ridge-back, side-end scrapers, also used as batterers (Plate N.1, no.7). 17 specimens. Largest 19.0 x 13.0 x 3.7cm. Smallest 8.5 x 5.7 x 2.5cm.

b) As (a), but with a projecting flange at one corner, perhaps forming a small hatchet (Plate N.1, nos.2 and 3). 12 specimens. Largest 15.0 x 9.0 x 4cm.

c) As (a), but with notches all round forming nosed or spurred points (Plate N.1, no.1). 14 specimens. Largest 17.0 x 7.7 x 5.7cm. Smallest 8.5 x 5.8 x 3.1cm.

d) Squat version of (a) without the pronounced ridge, usually more square (Plate N.3, no.3). 5 specimens. Largest 11.8 x 7.0 x 5.1cm.

e) Rocker scrapers. Reverse of flake almost semi-circular (Plate N.3, no.1). 1 specimen, measuring 12.0 x 8.8 x 4.0cm.

f) As (a), but with burin. 2 specimens, measuring 12.7 x 6.0 x 4.2cm. and 10.7 x 6.5 x 2.7cm.

g) Hollow scrapers with chisel or scraper end (Plate N.1, no.6). 4 specimens. Largest 15.0 x 7.0 x 5.3cm. Smallest 6.0 x 4.5 x 3.7cm.

CLASS 2. Total 34. TYPE: ROUND SCRAPERS

DESCRIPTION

Large, roughly circular, chunky flakes of chert. Usually the top flake off a large nodule with some cortex left on. Made by the block on block technique, but secondary flaking probably by both hard and soft hammers.

SUBDIVISIONS

a) Domed scrapers. Top flake of nodule, trimmed to roughly domed shape and fairly steep. 20 specimens. Largest 12.8 x 10.5 x 4.8cm. Smallest 9.0 x 9.5 x 3.4cm.

b) Disc scrapers. Either a thin top flake, or the dome of (a) has been removed straight. These are circular and flat with retouched edges. 14 specimens. Largest 10.6 x 10.6 x 1.8cm. Smallest 7.7 x 7.7 x 2.8cm.

CLASS 3. Total 20. TYPE: STEEP SCRAPERS

DESCRIPTION

Steep scrapers made on blade cores, or variable sized nodules, some very large, trimmed by removal of blade flakes. Also made on almost square chunks. Some cortex left.

SUBDIVISIONS

a) Massive steep scrapers on very large nodules with trimming to form plane (Plate N.2, no.2). 3 specimens. Largest 5.3 x 15.0 x 10.5cm. Smallest 15.0 x 7.7 x 8.6cm.

b) Steep scrapers on neatly domed chunks. 18 specimens. Largest 8.4 x 5.5 x 3.3cm. Smallest 7.0 x 4.5 x 6.5cm.

c) On squat, roughly square chunky flakes. 4 specimens. Largest 10.5 x 9.8 x 3.3cm.

d) On long prismatic cores. 5 specimens. Largest 16.6 x 6.5 x 7.0cm. Smallest 8.0 x 4.6 x 2.5cm. The retouch is more substantial than would be expected were it done merely to regularise the edge of a striking-platform.

CLASS 4. Total 4. TYPE: CRESTED BLADES

DESCRIPTION

Large roughly crested blades of chert with curving long section. Removed from cores, usually as a preparatory stage to create the initial ridges which enable blades to be obtained. Generally re-used as scrapers.

SUBDIVISIONS

a) Re-used as side-scrapers. 3 specimens. Largest 18.0 x 9.0 x 5.7cm. Smallest 13.0 x 4.0 x 2.2cm.

b) Re-used as end-scrapers. 1 specimen, measuring 11.0 x 4.2 x 3.8cm.

CLASS 5. Total 13. TYPE: TRIANGULAR FLAKE-SCRAPERS

DESCRIPTION

Roughly sub-triangular flakes, some chunky, others flat. Retouched to form pointed scrapers.

SUBDIVISIONS

a) On rather thick flakes. 9 specimens. Largest 15.0 x 8.2 x 2.5cm. Smallest 20.5 x 9.0 x 3.0cm.

b) On flat flakes, reminiscent of the Levallois technique (Plate N.3, no.2). 2 specimens, the larger measuring 7.5 x 7.5 x 1.9cm.

c) On Levallois flakes. 2 specimens, measuring 11.0 x 9.7 x 1.4cm. and 8.0 x 10.2 x 2.8cm.

CLASS 6. Total 18. TYPE: RETOUCHED FLAKES

DESCRIPTION

Flakes of varying shapes and thicknesses, retouched for use as scrapers, and occasionally with scars of battering.

SUBDIVISIONS

a) Rough flakes retouched as scrapers (Plate N.2, no.3). 8 specimens. Largest 14.2 x 7.4 x 1.8cm. Smallest 8.4 x 7.4 x 1.8cm.

b) Retouched fragments. 10 specimens.

CLASS 7. Total 15. TYPE: BLADES

DESCRIPTION

Large, rough blades, some retouched for various uses, others unretouched.

SUBDIVISIONS

a) Retouched as scrapers. 7 specimens. Largest 15.0 x 5.8 x 2.4cm. Smallest 11.0 x 5.0 x 1.5cm.

b) Saw-toothed blades. 1 specimen, measuring 9.3 x 6.8 x 2.0cm.

c) Backed blades. 2 specimens, one broken, the other measuring 13.3 x 4.7 x 1.5cm.

d) Blades with nibbled retouch. 2 specimens, the larger measuring 10.3 x 5.1 x 1.9cm.

e) Unretouched blades. 3 specimens. Largest 15.5 x 5.0 x 2.0cm.

CLASS 8. Total 68. TYPE: CHOPPING TOOLS

DESCRIPTION

Large chert nodules or big flakes, some with retouched or trimmed cutting edges. All show signs of battering. Most of the large examples have a rough shaping to form a hand-hold: for this purpose, either one or more flakes were removed, or else the rounded, natural cortex of the nodule was left intact.

SUBDIVISIONS

a) Choppers made on large, natural pebbles with a few flakes removed (Plate N.2, no.1). 12 specimens. Largest 18.0 x 16.0 x 5.3cm. Smallest 9.0 x 8.5 x 1.8cm.

b) Choppers on flakes. 31 specimens. Largest 15.5 x 9.7 x 5.4cm. Smallest 12.5 x 8.0 x 4.3cm.

c) Round chopper-cutters with 'scalloped' edges (i.e. having large notches). 8 specimens. Largest 9.0 x 8.5 x 4.0cm. Smallest 7.5 x 7.0 x 4.8cm.

d) Choppers on chunks (Plate N.1, no.8). 17 specimens. Largest 14.5 x 7.0 x 4.8cm. Smallest 11.0 x 9.0 x 9.0cm.

CLASS 9. Total 15. TYPE: CRESCENT-SHAPED SCRAPER-CHOPPERS

DESCRIPTION

Fairly large, flattish chert flakes. One more or less straight side, the other curved to a rough cresent shape. Cortex left over most of the obverse. There is retouch on the straight side to produce a scraping or chopping edge. The curved side is sometimes flaked, but could also be left plain. Both edges usually bear scars caused by percussion during use.

SUBDIVISIONS

a) Plain example, just as described above. 12 specimens. Largest 19.0 x 13.0 x 3.7cm. Smallest 10.2 x 6.3 x 4.2cm.

b) As (a), but with a carefully made steep-scraper added. 3 specimens. Largest 14.0 x 6.9 x 1.8cm. Smallest 9.7 x 6.6 x 2.3cm.

CLASS 10. Total 1. TYPE: BURINS

DESCRIPTION

Graving tools, made by the removal of spalls at one end of thick blades or flakes whose sides have been retouched to provide parallel scraping-edges.

SUBDIVISIONS

a) Polyhedric burin on a thick flake used as a side-scraper (Plate N.1, no.5). 1 specimen, measuring 12.0 x 4.9 x 1.9cm.

CLASS 11. Total 7. TYPE: CORES

DESCRIPTION

Most of the core-like nodules in the assemblages have been used as choppers or scrapers. The designation 'core' is given here to those which bear no apparent signs of use. 7 specimens, various dimensions.

CLASS 11. Total 25. TYPE: UNRETOUCHED FLAKES

DESCRIPTION

Large, rough flakes both used and unused. 25 specimens. Largest 17.3 x 9.4 x 3.0cm. Smallest 8.0 x 4.9 x 1.7cm.

CLASS 13. Total 2. TYPE: PICKS

DESCRIPTION

Very large chert nodules shaped to an elongated point. Either irregular and chunky, pear-shaped with heavy butt, or bar-shaped.

SUBDIVISIONS

a) Long, heavy-butted pear-shaped picks. 1 specimen, measuring 21.0 x 8.6 x 7.3cm.

b) Long, straight picks (Plate N.3, no.5). 1 specimen, measuring 18.4 x 4.0 x 2.5cm.

CLASS 14. None. TYPE: AXES

(Some of the class 13 picks were almost bifacial but were too rough to count as true axes.)

CLASS 15. Total 3. TYPE: POINTS

DESCRIPTION

Curved, roughly crescent-shaped but coming to a sharp point at one end.

SUBDIVISIONS

a) Crescent-shaped flake-scrapers with a sharp point (Plate N.1, no.9). 2 specimens. Larger 16.0 x 9.5 x 4.0cm.

b) Point on smaller flake, one end oblique and retouched to form a point. 1 specimen, measuring 9.2 x 5.0 x 1.9cm.

The total number of Heavy Neolithic specimens from the Main Cave is 280.

B. HEAVY NEOLITHIC FROM CAVE V ("VICTORIA CAVE")

Classes 16 to 33 were allocated to this group of material, but classes 16 to 19 were not used.

CLASS 20. Total 4. TYPE: STRAIGHT-BACKED CHOPPERS

DESCRIPTION

Large chunky flakes struck from chert nodules. Steep, almost straight edge coming up to a sharpish ridge. Oblique slope to chopping edge which is usually also a scraper. Usually subrectangular (Plate N.2, no.5). 4 specimens. Largest 14.0 x 11.0 x 4.0cm. Smallest 10.9 x 13.4 x 5.0cm.

CLASS 21. Total 11. TYPE: ROUND SCRAPERS

DESCRIPTION

Round (domed or disc-like) flakes of chert, retouched as scrapers. Corresponds broadly to class 2 in the Main Cave.

SUBDIVISIONS

a) Domed scrapers (Plate N.3, no.6). 3 specimens. Largest 13.5 x 13.3 x 5.0cm. Smallest 9.7 x 9.2 x 4.7cm.

b) Disc scrapers. 2 specimens, largest 12.0 x 9.5 x 2.5cm.

c) Rounded scrapers, with edge opposite the working edge shaped by two blows to a sharp, V-shaped point, or with a similar point formed by one natural straightish edge and one worked edge. These pieces are essentially irregular shaped scrapers-cum-choppers with pointed bases (?for hafting). 6 specimens. Largest 13.5 x 14.5 x 5.8cm. Smallest 10.0 x 9.5 x 3.3cm.

CLASS 22. Total 4. TYPE: PICKS

DESCRIPTION

On very large core nodules, roughly shaped into irregular pyriform picks, but angular and lumpy. Some have cutting or battering edges as well. One face is usually flat. Corresponds to Class 13 of the Main Cave.

SUBDIVISIONS

a) Largely, roughly pyriform picks with triangular sections. One side usually straight. 4 specimens (2 long, 2 stumpy). Largest 23.0 x 9.7 x 9.0cm. Smallest 9.3 x 8.2 x 6.1cm.

b) Long, nearly straight picks. Not represented in Cave V.

CLASS 23. Total 1. TYPE: BIFACES

DESCRIPTION

Roughly made axes. Heavy butt, pointed tip. Rough, stepped retouch. Wavy cutting edges with deep flakes removed on alternate faces (Plate N.2, no.6). 1 specimen, measuring 13.0 x 8.3 x 6.4cm.

CLASS 24. Total 33. TYPE: STEEP SCRAPERS

DESCRIPTION

Steep scrapers of every shape, domed, on pebbles, prismatic cores, chunks, or flakes (some corresponding to Class 3), and ranging from massive planes to small examples akin to Upper Palaeolithic specimens.

SUBDIVISIONS

a) Massive domed planes. 1 specimen, measuring 11.0 x 8.3 x 8.5cm.

b) Domed scrapers. 7 specimens. Largest 13.0 x 9.5 x 8.0cm. Smallest 8.2 x 7.2 x 6.0cm.

c) Steep scrapers on prismatic cores (Plate N.3, no.4). 3 specimens. Largest 7.6 x 5.3 x 10.0cm. Smallest 2.3 x 3.5 x 1.0cm. As was the case with Class 3, the retouch is substantial enough to suggest that these cores were reused as scrapers.

d) Smaller domed scrapers. 4 specimens. Largest 3.7 x 5.4 x 6.0cm. Smallest 2.3 x 3.3 x 5.4cm.

e) Irregularly shaped scrapers. 1 specimen.

f) Pebbles with a few flakes removed to form steep scrapers. 7 specimens. Largest 9.7 x 7.5 x 11.5cm. Smallest 7.0 x 4.8 x 4.5cm.

g) Steep scrapers on rough chunks. 7 specimens. Largest 7.5 x 8.5 x 13.0cm. Smallest 7.0 x 4.8 x 13.0cm.

h) Steep scrapers on roughly rectangular chunks. 3 specimens, all close in size. Largest 8.3 x 5.2 x 2.2cm.

CLASS 25. Total 10. TYPE: RETOUCHED FLAKES

DESCRIPTION

Retouched flakes used as scrapers or choppers. This class grades into the chopping tools. Corresponds to Class 6 in the Main Cave.

SUBDIVISIONS

a) Rough flakes, retouched and used as scrapers or choppers. 7 specimens. Largest 14.5 x 12.7 x 2.5cm. Smallest 8.2 x 10.2 x 2.8cm.

b) Elongated, rectangular blade-flakes with slight flanges or points, retouched down their edges as side-scrapers. 3 specimens. Largest 12.5 x 6.0 x 3.0cm. Smallest 11.3 x 9.8 x 4.7cm.

CLASS 26. Total 8. TYPE: RETOUCHED FLAKE-BLADES

DESCRIPTION

Rough flake-blades with some retouch. Some with faceted butts. Corresponds broadly with Class 25b but without points.

SUBDIVISIONS

a) As points, sometimes hammered at butt. 7 specimens. Largest 11.5 x 3.9 x 1.6cm. Smallest 4.4 x 5.5 x 2.8cm.

b) Saw-edged. 1 specimen. 8.5 x 5.2 x 1.4cm.

CLASS 27. Total 14. TYPE: NIBBLED FLAKE-BLADES

DESCRIPTION

Flake-blades with 'utilisation' or nibbled retouch, some slightly denticulated, others with abrupt but irregular faceting. Some have faceted butts. 14 specimens. Largest 13.5 x 5.0 x 2.6cm. Smallest 11.3 x 4.5 x 1.2cm.

CLASS 28. Total 82. TYPE: CHOPPING-TOOLS

DESCRIPTION

These range from massive pebbles to very large flakes. Most are choppers with cutting or scraping edges. They are made by both the block-on-block and Levallois techniques. Corresponds with Class 8 of the Main Cave.

SUBDIVISIONS

a) On chunks with flakes removed from all surfaces. Some inverse/obverse retouch giving denticulated cutting edges. 25 specimens. Largest 13.0 x 9.8 x 6.4cm.

b) On roughly circular chunks, flakes on both surfaces and usually with a cortex hand-hold (Plate N.2, no.4). 5 specimens. Largest 13.3 x 14.2 x 6.3cm. Smallest 6.8 x 10.3 x 5.7cm.

c) On large flakes. 25 specimens. Largest 14.2 x 18.0 x 3.8cm. Smallest 9.6 x 8.3 x 3.2cm.

d) On roughly chipped pebbles. 15 specimens. Largest 13.5 x 11.0 x 8.0cm. Smallest 7.3 x 5.7 x 2.9cm.

e) On Levallois-type cores. 12 specimens. Largest 10.0 x 10.6 x 6.2cm. Smallest 5.2 x 6.5 x 1.3cm.

CLASS 29. Total 8. TYPE: END-SCRAPERS

DESCRIPTION

End-scrapers on blades and on small chunks. Some are combined with side-scrapers.

SUBDIVISIONS

a) End-scrapers on blades. 2 specimens, measuring 10.0 x 4.1 x 0.9cm. and 9.2 x 3.9 x 0.8cm.

b) End-scrapers on core fragments or chunks. 3 specimens. Largest 10.3 x 5.1 x 3.7cm. Smallest 7.0 x 3.7 x 2.3cm.

CLASS 30. Total 32. TYPE: USED FLAKES AND CHUNKS

DESCRIPTION

Miscellaneous selection of flakes and chunks showing signs of

use apparently for scraping or chopping. 32 specimens. Largest 18.4 x 11.0 x 4.0cm. Smallest 7.3 x 5.9 x 2.4cm.

CLASS 31. Total 4. TYPE: TRIANGULAR POINTS

DESCRIPTION

Flat triangular points. 4 specimens (2 slightly retouched along edges, 2 unretouched). Largest 11.6 x 7.0 x 2.0cm. Smallest 9.7 x 5.5 x 2.3cm.

CLASS 32. Total 4. TYPE: POINTS

DESCRIPTION

Points on thick flake-blades, corresponding only broadly to Class 15.

SUBDIVISIONS

a) Broad, thick points. 3 specimens. Largest 8.1 x 2.9 x 2.1cm. Smallest 5.7 x 4.6 x 2.4cm.

b) On flake obliquely snapped and brought to a point by retouching across the oblique end to form a leaf-shaped point. 1 specimen, measuring 10.0 x 5.5 x 2.9cm.

CLASS 33. Total 33. TYPE: CORE DEBITAGE

DESCRIPTION

Rough flakes and various core trimming flakes. 33 specimens, varying sizes.

The total number of Heavy Neolithic pieces from Cave V is 248, and the overall total of Heavy Neolithic specimens is 528.

C. THE SMALLER NEOLITHIC ELEMENT IN THE MAIN CAVE AND CAVE V

Through lack of time, only the smaller element contained in G and K could be measured; those implements from Division I and Cave V were only counted and sorted. Clases 34 to 52 were allocated to this group of material, but classes 34-39 were not used.

CLASS 40. Total 209. TYPE: END-SCRAPERS ON LONG, THIN BLADES

DESCRIPTION

Typical end-of-blade end-scrapers, made on blades of different lengths, and also on flake-blades. There may be some mixture with the Upper Palaeolithic filtering down the swallow-hole. The scraping edge is very delicately worked in some cases.

SUBDIVISIONS

a) Double end-scrapers. G and K, 14 specimens. Largest 14.0 x 3.0cm. Smallest 4.0 x 2.5cm.; thickness not measured but see illustration, Plate N.3, no.9. (Division I, 80 specimens. Cave V, 2 specimens.)

b) End-scrapers (Plate N.3, no.9). 81 specimens. Measurements similar to those of specimens in (a).

c) Side-end scrapers on blades (Plate N.4, no.3). G and K, 7 specimens. Measurements as in (a). (Division I, 25 specimens. Cave V, none.)

CLASS 41. Total 27. TYPE: POINTS

DESCRIPTION

Points on ends of long blades and occasionally on flake-blades. Mostly small nosed points, lighter than those of Classes 15 and 32.

SUBDIVISIONS

a) Points on simple blades or flake-blades including lames de dégagement (Plate N.4, no.1). 8 specimens.

b) Points on retouched blades and flakes, sometimes with steep retouch all round. One example (Plate N.4, no.10) brought to a lunate-like point by steep backing. G and K, 12 specimens. Longest 14.9 x 2.2cm. Shortest 6.0 x 2.0cm. (Division I, 7 specimens (including one point on a side-scraper). Cave V, none.) Both subdivisions measured together.

CLASS 42. Total 17. TYPE: BURINS

DESCRIPTION

Burins on both flake-blades and flakes, corresponding typologically to Class 10, but smaller and lighter.

SUBDIVISIONS

a) Angle burins (Plate N.4, no.4). G and K, 1 specimen. (Division I, 4 specimens. Cave V, none.)

b) Bec-de-flûte burins. G and K, 5 specimens. (Division I, 3 specimens. Cave V, none).

c) Polyhedric burins. G and K, 1 specimen. (Division I, 3 specimens. Cave V, none.) All measured together. Longest 10.0 x 2.8cm.

CLASS 43. Total 5. TYPE: AXES

DESCRIPTION

Axes of both flint and chert, the former polished and reflaked. All are elongated and approximately parallel-sided, narrowing slightly towards their butts.

SUBDIVISIONS

a) With rather angular corners at the bit end and gently curving cutting edge (Plate N.3, no.8). G and K, 2 specimens. (None from Division I or Cave V.)

b) With continuously curving tip, no angles. The largest specimen is of chert and almost Heavy Neolithic in size (Plate N.3, no.7). G

and K, 3 specimens. (None from Division I or Cave V.)

All axes measured together: largest 13.4 x 6.4 x 3.5cm; smallest 9.4 x 4.4 x 2.8cm.

CLASS 44. Total 3. TYPE: SICKLE BLADES

DESCRIPTION

Sickle blades with silica polish.

SUBDIVISIONS

a) Denticulated. Very straight parallel-sided blades, denticulated retouch down both edges. Much used (Plate N.4, no.2). G and K, 2 specimens. (None from Division I or Cave V.)

b) Small saw-toothed sickle blades (Plate N.4, no.9). G and K, 1 specimen. (None from Division I or Cave V.)

All sickle blades measured together: largest 9.4 x 3.7cm.; smallest 5.8 x 1.9cm.

CLASS 45. Total 3. TYPE: PICKS

DESCRIPTION

Smaller and lighter than those in Class 13 or Class 22. Long and narrow, almost straight bar-like implements with points. Triangular sections (Plate N.3, no.10). G and K, 2 specimens. (Division I, 1 specimen. Cave V, none). Largest 12.2 x 2.8 x 2.4cm. Smallest 10.0 x 2.5 x 3.2cm.

CLASS 46. Total 236. TYPE: SCRAPERS

DESCRIPTION

Scrapers made on blades, flake-blades, flakes and chunks. Some of the side-end scrapers match the Heavy Neolithic in both shape and deeply fluted steep retouch. Not included are those scrapers made on long thin blades, which are counted in Class 40, except for a few from Division I and Cave V which were included because all classes of end scrapers from here were counted together in Class 46.

SUBDIVISIONS

a) Side-scrapers (Plate N.4, no.7). Made chiefly on flakes. G and K, 36 specimens. Largest 12.8 x 7.6 x 2.4cm. Smallest 10.6 x 2.5 x 3.2cm. (Division I, 18 specimens plus 42 rough flake-scrapers. Cave V, 11 specimens.)

b) Side-end-scrapers (Plate N.4, no.5). G and K, 24 specimens. Largest 12.4 x 5.0 x 1.6cm.

c) Steep scrapers. G and K, 34 specimens. Largest 9.8 x 7.0 x 5.1cm. Smallest 4.2 x 3.6 x 6.2cm. (Division I, 23. Cave V, 34, but most could equally well be Upper Palaeolithic.)

d) Rostrate scrapers. G and K, 2 specimens. Largest 7.2 x 6.3 x 1.2cm. Smallest 7.2 x 4.2 x 1.5cm. (Division I, 3 specimens. Cave V, none.)

e) Hollow scrapers. On rough flake-blades (Plate N.4, no.11). G and K, 5 specimens. Largest 9.5 x 4.2 x 2.0cm. Smallest 7.2 x 6.3 x 1.2cm. (None from Division I or Cave V.)

f) Disc scrapers. Either the top flake from a core, all cortex, or on prepared flakes (Plate N.4, no.6). G and K, 4 specimens. Largest 7.2 x 6.0 x 0.4cm. Smallest 6.5 x 5.4 x 0.5cm. (None from Division I or Cave V.)

CLASS 47. Total 13. TYPE: CRESTED BLADES

DESCRIPTION

Crested guide flakes of varying lengths and widths, lighter and smaller than those of Class 4. There is clearly some risk of mixture with Upper Palaeolithic examples. G and K, 24 specimens. Largest 12.5 x 2.5 x 1.6cm. Smallest 6.0 x 2.0 x 1.9cm. (Division I, 18 specimens. Cave V, 1 specimen.)

CLASS 48. Total 20. TYPE: CORE DEBITAGE

DESCRIPTION

Small lumps and flakes off cores. G and K, 20 specimens. Largest 12.5 x 5.3cm. Smallest 5.5 x 4.5cm. (Division I and Cave V not counted.)

CLASS 49. Total 84. TYPE: BLADES

DESCRIPTION

Lighter and thinner than those of Class 7, these are simple unretouched blades. G and K, 84 specimens. Largest 15.4 x 4.5cm. Smallest 6.8 x 1.5cm. (None from Division I or Cave V.)

CLASS 50. Total 73. TYPE: RETOUCHED BLADES

DESCRIPTION

Blades with retouch, backed blades, and saw-toothed blades with no silica polish. G and K, 44 specimens. Largest 12.0 x 5.0 x 3.0cm. Smallest 5.8 x 3.1 x 0.5cm. (Division I, 23 backed and retouched plus 3 toothed blades. Cave V, 3 backed.)

CLASS 51. Total 44. TYPE: CHOPPING TOOLS

DESCRIPTION

Small chopping tools on pieces of core, chunks etc. G and K, 22 specimens, not measured. (Division I, 13 specimens. Cave V, 9 specimens.)

CLASS 52. Total 6. TYPE: LEVALLOIS FLAKES

DESCRIPTION

Flakes struck radially by the Levallois technique, as in the illustrated specimen (Plate N.4, no.8). G and K, 6 specimens. Largest 10.0 x 5.8 x 1.0cm. Smallest 6.5 x 3.4 x 0.6cm. (None from Division I or Cave V).

The total number of pieces listed belonging to the smaller Neolithic element is 740. This concludes the inventory and description of the Neolithic flint artifacts.

GENERAL COMMENTS

The Neolithic assemblages of Mugharet el-Bezez appear to represent an industry of woodsmen, though this conclusion is reached without benefit of microwear analysis; the implements are of types which we associate mainly with chopping, hammering, planing or scraping, with many points added to the general purpose tools. Many implements bear scars of heavy battering, and it is probable that some may have been used as wedges. Those of the Heavy Neolithic element are generally of fine workmanship, made by the block-on-block technique with finer retouching showing through the signs of use. The end-scrapers of the smaller element are difficult and, in some cases, impossible to distinguish from those of the Upper Palaeoloithic. It is much regretted that it was not possible to have every class illustrated, but we are grateful to M. Dunand and his draughtsman for the accompanying drawings which were made after the team had left the Lebanon.

OTHER FINDS

To round off this description of the Bezez Neolithic material it should be added that several sherds of Byblos Néolithique Ancien pottery, as well as EB-MB sherds, were found. But the associations are dubious, since Hellenistic and Byzantine sherds and even a green-glazed Ommayad lamp were also among the finds.

Although they cannot be definitely related to the Neolithic, 14 shells from the site were identified at the American University of Beirut:

7 Triton eurtritonium corrugatum Lk.
2 Dolium galea Linn.
3 Patella aspeda Phil.
1 Cassis undulata Linn.
1 Petunculus sp. (?) - a possible fossil with worn edges and pierced for suspension.

Additional possible Neolithic artifacts include 7 small horn-cores levelled off at the frontals and with broken tips, which could have been used as small picks. A few ground stone tools were also present, namely, one broken basalt pestle, a whetstone, a pebble polisher and a circular grinder of hard crystalline sandstone measuring c. 7.0 x 7.0 x 4.3cm.

DISCUSSION AND CONCLUSIONS

Although it is unsatisfactory that none of the artifacts can really be considered to be in situ, nevertheless this catalogue of types from a cave context adds to our meagre knowledge of one of the specialised offshoot industries of the Levant Neolithic which previously has been known only from open sites; when Neolithic industries are found in Levantine caves, they seem to represent a more 'normal' kind of assemblage, examples being the top of Yabrud Shelter III (Rust, 1950), Sefunim (Ronen, 1971), and Jaita I

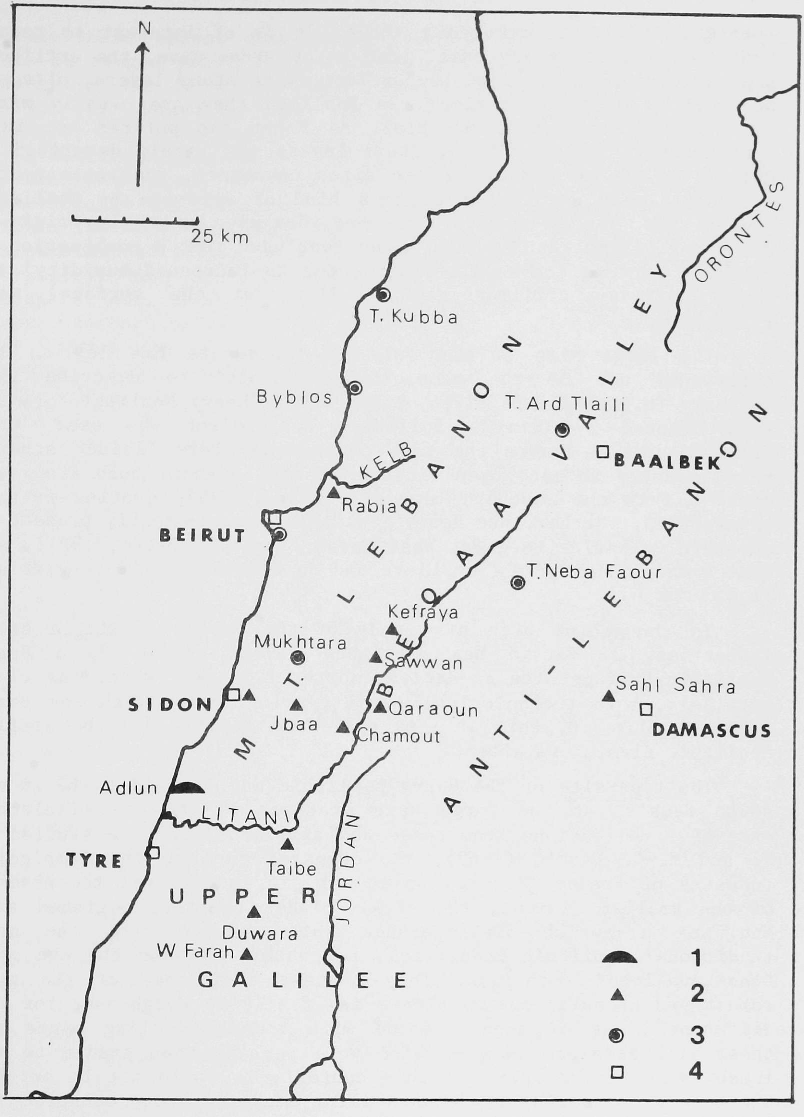


Fig.N.1: Map of the central Levant, showing known distribution of Heavy Neolithic sites. 1: Heavy Neolithic in a cave site (Bezez). 2: Heavy Neolithic open-air sites. 3: Middle Neolithic tell sites. 4: Modern cities and towns.

(Lartet, 1877), to name only three. It is of interest to recall that in virtually every case, just as at Bezez Cave, the artifacts are associated, near or at the surface, with stony layers, pits, or subsidences of roof or floor. In addition they are usually mixed with Historic-to-Recent material. As Ronen has pointed out in a comprehensive review (1971), these layers are rarely described in detail by the excavators of the sites concerned, and consequently we know almost nothing about this kind of site-use by Neolithic communities, nor do we have any clear idea even as to the origin of the stony layers. At Sefunim, Ronen concluded that a combination of climatic factors (cave-wall erosion due to increased humidity) and human activity (filling and levelling of the surface) were responsible.

The large size of many of the implements has led to the occasional use of the name 'Gigantolithic' to describe this industry (e.g. Mellaart, 1965, p.46) while 'Heavy Neolithic' is the term adopted by Garrod, following H. Fleisch who used 'Gros Néolithique' to denote the same phenomenon. Père Fleisch studied this industry at many open sites in South Lebanon, both along the coast and in the southern Beqa'a (Fleisch, 1954, quoting further references). Further, the Heavy Neolithic was apparently present in northern Palestine (e.g. at Wasi Farah; Turville Petre, 1927), and near Damascus in Syria (van Liere and de Contenson, 1963, p.178 and Figs.3 and 4)).

In connection with his study of the Byblos Neolithic stone industries, J. Cauvin has published (1968, pp.246-53) a Heavy Neolithic surface site at Rabiya, north of Beirut, which has close parallels, both technologically and typologically, with the Bezez industry. However, this site is called an atelier and the smaller Neolithic element is absent.

The type-site of the Heavy Neolithic may be said to be in the south Beqa'a, at the large open stations of Qaraoun. Fleisch's extensive collections from these and similar sites were studied by J. and M.-C. Cauvin (1969), who compared them to the Campignian industry of France. As they point out, it is not just the absence of the smaller element, the sickle-blades, burins, polished axes and so on, which distinguishes this culture from the more traditional Neolithic industries, but such traits as the use of a "Neo-Levallois" technique. They suggest that some of the more robust and archaic-looking pieces may really be rough-outs for two different kinds of axes - those with rounded cutting edges and those with straight ones - which were perhaps then traded to the inhabitants of villages. In this context, it would not be outside the bounds of possibility that a flint-knapping group occupied the Bezez cave in order to exploit the abundant local flint. However, the obviously heavily-used appearance of most of the big tools in addition to the presence of the smaller element, which resembles that found at village sites, argues against this interpretation.

More certainly, the Heavy Neolithic, wherever found in the Levant, is an occupationally specialised industry for use by the followers of a particular trade or way of life, just as, for example, on the desert plateau of East Jordan one finds many camping sites and chipping floors containing unusual artifacts of

Palaeolithic aspect mixed with traditional Neolithic implements such as tanged points. These industries, for example the Dhobaian (Waechter and Seton Williams, 1938) and Kilwan (Rhotert, 1938, pp.121ff.) comprised the artifacts of Neolithic hunters and traders, the itinerant as opposed to the sedentary population. The long Neolithic flint knives of Kharaneh are another case in point, specially designed for some task connected with hunting, probably specifically for skinning game animals. The implements incorporated within the Heavy Neolithic would appear to be designed for hard use on substantial timber as opposed to lighter wood-working tools for carpentry. Many of the implements, including the axes and huge scrapers, bear signs of heavy battering, thus suggesting secondary usage, perhaps as timber-splitting wedges. These scars of heavy use are characteristic of the Bezez artifacts. From this it may be surmised that the wielders of these inplements were either itinerant groups of 'backwoodsmen', providing timber or clearing tracts of forest as required, and by request of the contemporary villagers, in return for bartered goods; which might well have included traditional implements of smaller size for their own domestic use; or they could have been villagers themselves, who simply moved out when need arose to clear land for farming, for founding a new village or simply to make trackways through the forests which were present in early Holocene times (Bottema and van Zeist, 1981, p.114). Perhaps, in view of the specialised equipment left at the scene of action and the crude, almost Lower Palaeolithic appearance of some of the implements, the former would be the most likely. Thus, ultra-conservative backwoodsmen working in the forests find their parallels in the hunting tribes of the open spaces, while the contemporary towns and villages offer outlets and barter possibilities for their endeavours. All three groups were doubtless in touch with each other and kept aware of each others' needs and innovations directly or through the medium of yet another group, the itinerant traders. Thus it is probable that Bezez was visited by these foresters for varying lengths of time and on more than one occasion. Beyond that it is not profitable to speculate.

The dating of the Heavy Neolithic is by no means clear. The Cauvins and Père Fleisch equate the industry with the Middle Neolithic of Byblos, but on purely typological grounds. One reason they give for this very late date is that at Byblos, axes with both round and straight ends occur together only during this phase, and the same combination is seen in the Heavy Neolithic axes and rough-outs. The Middle Neolithic of Byblos is contemporary with Amuq C in northern Syria and Middle Halaf elsewhere, dated about 5000 - 4500 B.C. with the 'Ardh Tlaili date of c. 4,710 B.C. (Libby, uncalibrated; see Kirkbride, 1969) offering a firm mid-point. In short, the Middle Neolithic of Byblos seems too late a date for the Heavy Neolithic. If we rely on the evidence of axe typology alone, out of two found in Bezez, both have rounded bits which is a Byblos Early Neolithic feature that carries over into the Middle phase. This, of course, is no criterion for dating, but in the meantime one can only hope that further and more reliable evidence will be forthcoming. Finally, one of the two C14 dates obtained by Ronen (1971) at Sefunim might have a bearing on the date of the Bezez

Neolithic, not because the assemblages are typologically similar, but because they have a similar stratigraphic context. The dates came from a silt layer in between a Natufian layer and an Aceramic Neolithic layer with abundant stones at Sefunim. The date from the lowest sample, from a hearth near the bottom of the silt layer, was 7,445±130 years B.C. (HV 3368), while the one from the top was 5,780±115 years B.C. (HV 2597), both uncalibrated. Ronen considers that the upper date marks the start of the deposition of the stony layer. In Lebanese terms, this would also be a Byblos Early Neolithic date, so that it is conceivable that our Neolithic occurred at roughly this time, provided that the stony layers represent the same climatic event.

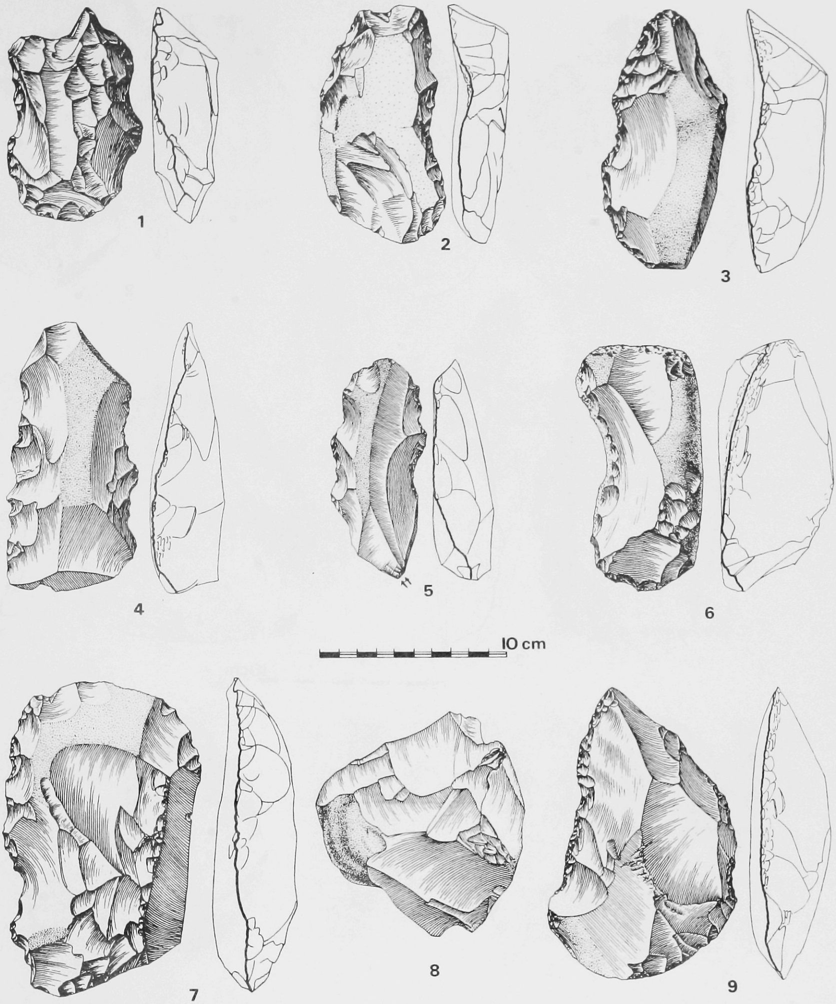


Plate N.1: Bezez Heavy Neolithic. 1, Class 1c; 2 and 3, Class 1b; 4 and 7, Class 1a; 5, Class 10a; 6, Class 1g; 8, Class 8d; 9, Class 15a. See text for description of classes.

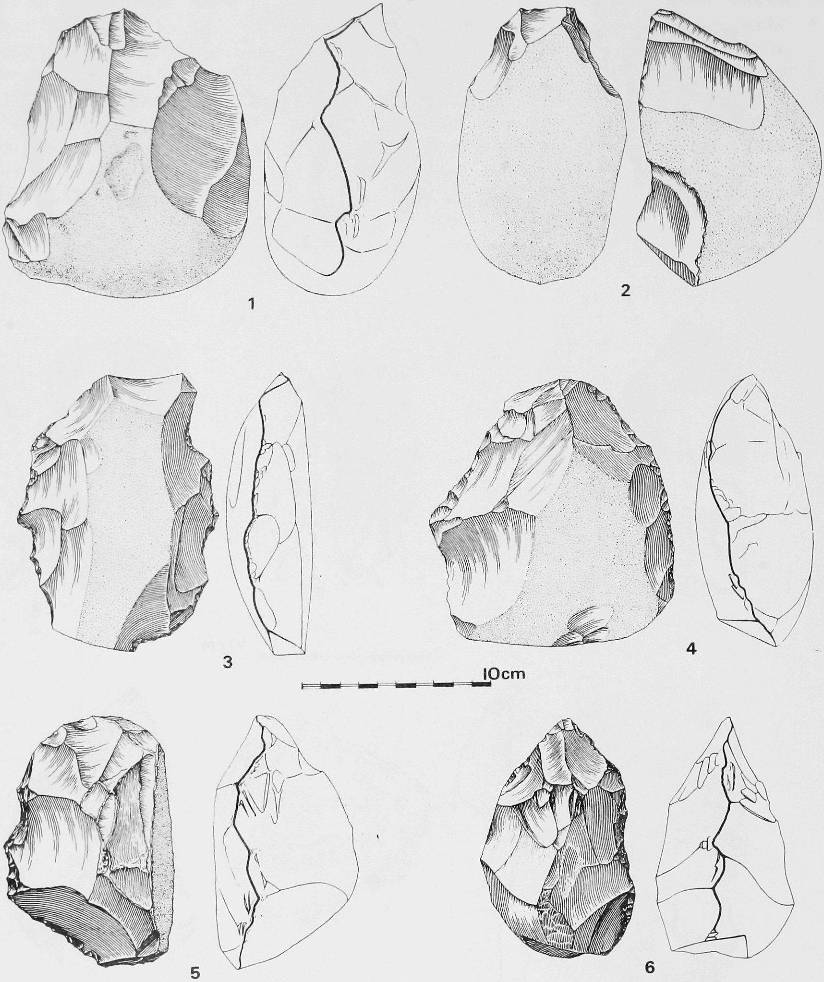


Plate N.2: Bezez Heavy Neolithic. 1, Class 8a; 2, Class 3a; 3, Class 6a; 4, Class 28b; 5, Class 20; 6, Class 23. See text for description of classes.

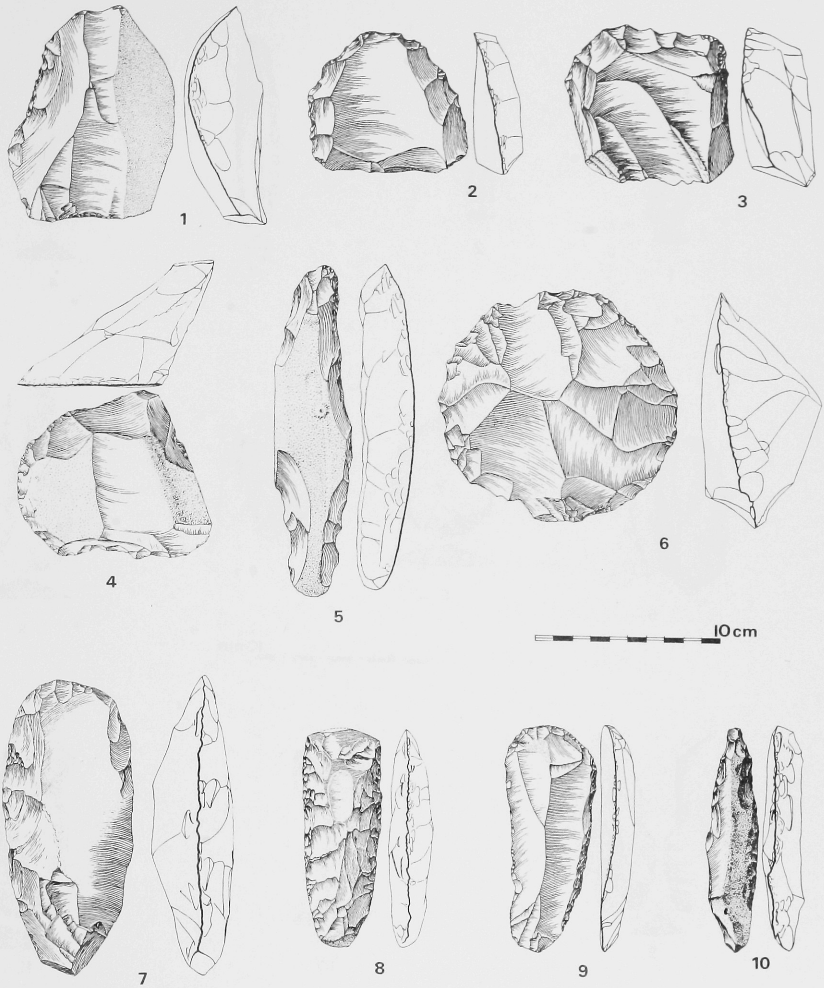


Plate N.3: Bezez Cave: Nos.1-6, Heavy Neolithic. 1, Class 1e; 2, Class 5b; 3, Class 1d; 4, Class 24c; 5, Class 13b; 6, Class 21a. Nos.7-10, Smaller Neolithic Element. 7, Class 43b; 8, Class 43a; 9, Class 40b; 10, Class 45. See text for description of classes.

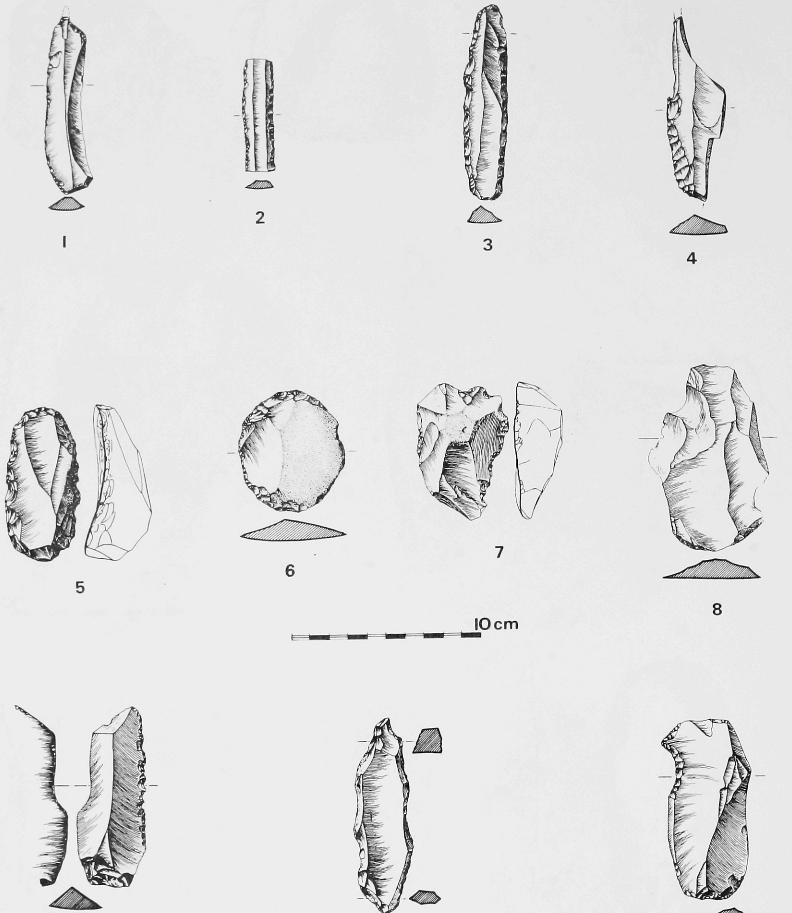


Plate N.4: Bezez Cave, Smaller Neolithic Element. 1, Class 41a; 2, Class 44a; 3, Class 40c; 4, Class 42a; 5 and 7, Class 46b; 6, Class 46f; 8, Class 52; 9, Class 44b; 10, Class 41b; 11, Class 46e. See text for description of classes.

CHAPTER 6

THE BRECCIAS OF THE ADLUN PROMONTORY
by the late J. Skinner*

The traces of Palaeolithic habitation sites in the cliffs south of Bezez were first noticed by Père Zumoffen (1900, pp.12-3). Since much of the evidence he records has disappeared, and since his book is out of print, it may not be amiss to quote his account of 1900 verbatim:

> A gauche en sortant de cette grotte (Bezez), les rochers voisins sont couverts de lambeaux de brèches osseuses, empâtant des lames de silex; elles occupent surtout les espaces compris entre les ouvertures de différents caveaux funéraires dont la roche est criblée.
>
> Ces brèches se prolongent vers le sud, contournent une pointe de rocher et remontent par derrière. Le côté sud de cette saillie est coupé verticalement. Des prismes monolithes taillés dans le massif rocheux contiennet chacun un caveau funéraire. Devant ces chambres sépulcrales se trouve une petite plateforme couverte d'une magnifique brèche formée de nombreuses et belles lames de silex ouvré et d'une grande quantité d'os fragmentés, os et silex par suite de l'ablation athmosphérique [sic] font saille sur la roche. Les premièrs dégrés d'un escalier qui monte à des caveaux supérieurs sont taillés dans le dépôt préhistorique devenu extrèmement dur. Les ciseaux ne produisent que des éraflures et le silex se brise plutôt que de se laisser extraire. Un peu plus loin, on voit dans ce magma de grands éclats d'os avec des débris de dents engagés dans la roche.
>
> En maint endroit les agents atmosphériques ont mis à nu ou désagrégé les silex, ils gisent assex nombreux sur le flanc de ces roches déclivés, dans les fentes, sous les herbes, jusque dans les champs cultivés qui s'étendent au pied de ces escarpements.
>
> Ces brèches osseuses s'étendent avec quelques interruptions sur une longueur de 200m. environ. Elles disparaissent près de la grande carrière phénicienne ou près de la grotte à double étage, c'est à dire, deux grottes superposées: l'inférieure est naturelle, la supérieure a été creusée de main d'homme.
>
> Cette grotte naturelle habitée par des chasseurs primitifs a une vingtaine de mètres de long et 5 à 12m. de large. Comme la précédente, cette caverne sert souvent d'abri pour les bestiaux du voisinage. Elles sont parfois

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* Editor's Note: The late Colonel James Skinner made a special study of the Promontory sites and this chapter incorporates his work, as deduced from field notebooks and maps. The samples were obtained by D. Kirkbride, and the flint was analysed by L. Copeland.

habitées par les bédouins nomades qui viennent passer l'hiver sur le bord de la mer. Le sol n'offre rien d'intéressant. Sur la paroi de droite en entrant se voit, à deux mètres de hauteur, une brèche noricie par la fumée où j'ai pu reconnaître des dents de boeuf avec des parcelles d'os et d'éclats en silex; à la base, se trouve un autre conglomérat empâtant des os et deux galets oblongs en basalte dont les extrémités du grand axe sont fortement érodés, preuve manifeste qu'ils ont servi de percuteur.

D'après les nombreux vestiges qui ont échappé à la destruction il est permis de supposer qu'Adloun était une grande et importante station de l'âge de la pierre, et peut être, la plus considérable de la côte phénicienne.

(On the left on leaving Bezez Cave, the neighbouring rocks are covered with patches of bone breccia, with flint blades; in particular, they occupy the spaces between the mouths of the various rock-cut tombs with which the cliffs are honeycombed. The breccias continue towards the south, rounding a prominent shoulder and passing up behind it. The southern face of this spur is cut vertically, forming a series of prisms, into the face of each of which is cut a tomb chamber. In front of these sepulchres there is a small platform covered by a magnificent breccia made up of numerous finely made flint blades and a large amount of bone fragments - bone and flint standing out of the matrix due to weathering. The lowest steps belonging to a staircase which leads to the upper tombs are cut into this now extremely hard, prehistoric deposit. Chisels only scratch the surface, and the flints break off before they can be extracted. A little farther on, large pieces of bone and teeth can be seen in the magma sticking to the rock.

In a few places, weathering agents have laid bare or released the flint, much of which occurs on the undersides of sloping rocks, in the crevices, under the bushes, even in the cultivated fields which stretch at the foot of the escarpments.

These bone breccias extend, with some interruptions, over a distance of about 200m. They disappear near the large Phoenician quarry, or near the two-storey high cave; that is, two caves superimposed; the lower one is natural, the upper has been hollowed out by man.

The natural cave was occupied by primitive hunters, and is about 20m. long and 5 - 12m. wide. Like the first [Bezez], it is often used as a stable for the local flocks. Sometimes both are inhabited by nomadic Bedouin, when they come to spend the winter on the coast. The soil contains nothing of interest, but on the right wall at the entrance one sees a smoke-blackened breccia at a height of about 2m., in which I have been able to distinguish the teeth of cattle with lumps of bone and flint flakes; at the base, another conglomerate is seen, full of bone and containing two basalt pebbles, with very battered extremities, proof that they had been used as hammerstones.

From the numerous traces which have escaped destruction, one can assume that Adlun was a large and important site in Stone Age times, and perhaps even the most substantial of the Phoenician coastal region.)

During the 1963 season at Bezez, the vestiges noticed by Zumoffen in the immediate vicinity of the cave and to about 70m. to the south, were examined, samples taken and the sketch-map prepared (Fig.P.1).

Unfortunately there was no time to study the caves with Palaeolithic breccias in the same cliff-line c. 200 - 300m. to the north, between the Police Post and Adlun village. According to the Levant Grid (1:50,000, Tyr-Nabitiye sheet), one of these is named Mugharet Aalaliye, and may be the double one mentioned in Zumoffen's last paragraph, above. The second, about which we have no information, is named Mugharet Daraji.

If the samples recovered are sparse, it is because of the difficulty in extracting them from the very hard matrix, as already eloquently described by Zumoffen; they do at least confirm that the find-spots were human habitations, whose presence must be taken into account when considering the Palaeolithic of Adlun as a whole. Before the depredations of the tomb-builders and the quarriers, it might have been possible to study these sites in more depth, but their present condition precludes this. We can only list the few artifacts recovered from the following locales:

LOCUS 3, THE 'HIGH CAVE'

This is probably the most important of these sites. It is all that remains of a large cave c. 45m. to the south of Bezez, reached via the footpath (Fig.P.1), and situated about 23 - 27m. above sea-level. It is not clear whether it and Locus 4 were part of the same cave originally. It shows on Plate S.3a as a dark patch on the right of the photograph. Four artifacts of Levalloiso-Mousterian appearance were taken from cemented deposits, now cut into steps by the quarriers, at the height of the lowest step (c. 25m. above sea-level). These artifacts consist of two flakes with faceted butts, and two fragments; three of the pieces have a blue-white patina, while the fourth is of black flint (quite rare in Bezez Cave).

LOCUS 4

A weathered cave, at 20 - 23m. above sea-level, where a kind of arch through cemented deposits exists as the result of erosion and destruction. From the back wall a large, single convex Quina racloir was recovered, in fragments. It is likely to be Yabrudian.

LOCUS 5

At the upper end of the weathered cave mentioned above (Locus 4), six Levalloiso-Mousterian artifacts were found eroding from the breccia. They consist of: two Levallois cores, two broken Levallois flakes (one burned) with faceted butts, one non-Levallois cortex-flake and one triangular point. All are of brown flint, patinated grey, unlike the artifacts of Bezez.

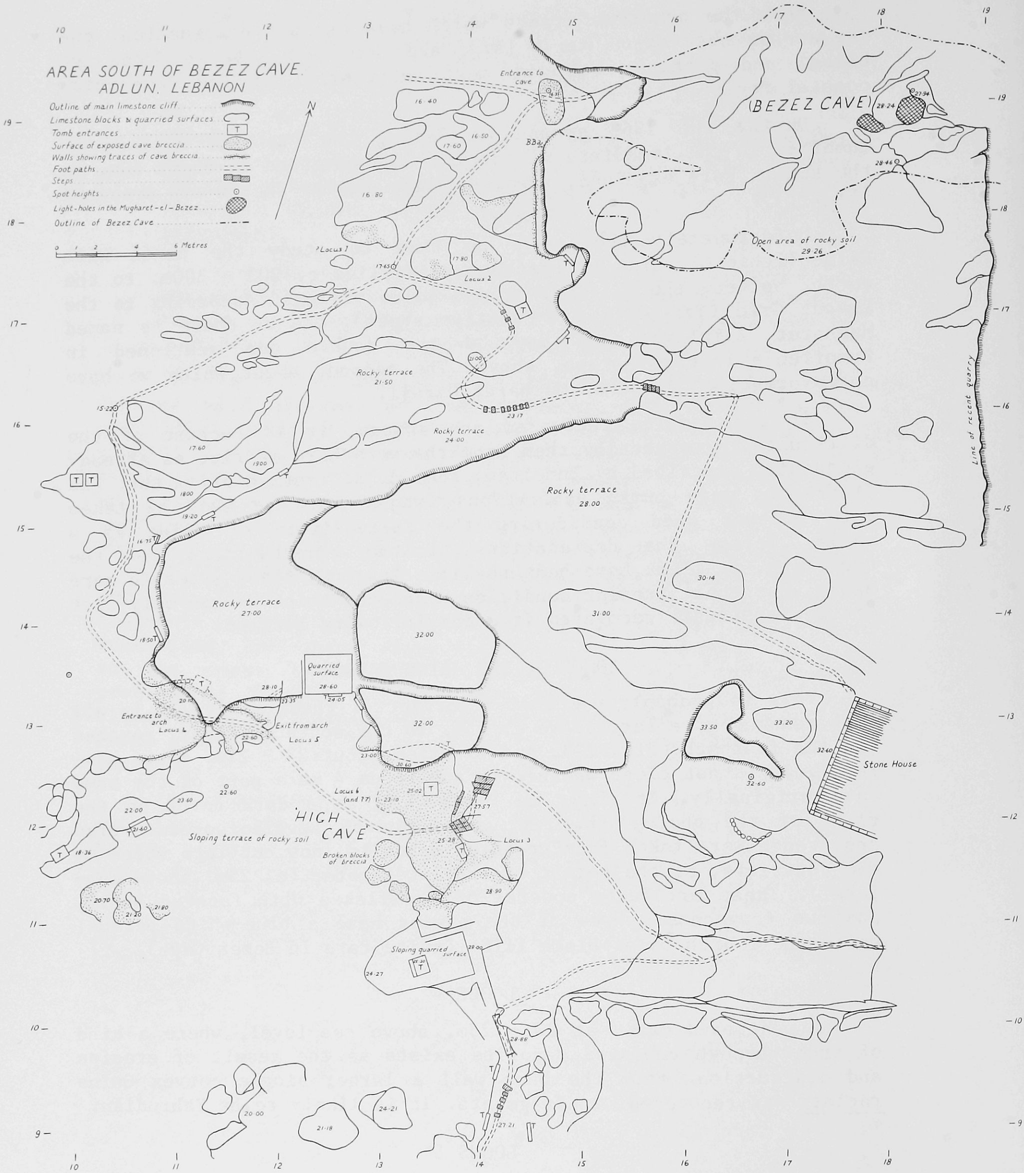


Fig.P.1 Sketch map of the area south of Bezez Cave, showing locations of further settlement traces

LOCUS 1

We judge the location of this findspot to be as marked on Fig.P.1, i.e. on the path leading south from Bezez Cave towards the other Loci. Five artifacts were taken from the very hard breccia; they appear to be Yabrudian rather than Levalloiso-Mousterian in character. They consist of: a flake thinned at the butt, with bifacial tip retouch; a naturally-backed knife, a broken core and a cortex-flake fragment; the only tool is a broken racloir with a notch, showing three different patinas.

LOCUS 2

Three artifacts were extracted from breccia beside the path going up to the first Phoenician tomb, to the south of Bezez Cave, approximately 1m. higher than Locus 1, i.e. at 17.8m. above sea-level. These consist of: a massive rabot or end-scraper fragment, made on a core-preparation flake, and two burned and blackened fragments of flakes, one with racloir retouch.

LOCUS 6

Eight artifacts were found in surface soil below the High Cave (Locus 3), consisting of: 2 cores (1 Levallois), and six flakes, two of which could be Levallois, but the others are possibly Heavy Neolithic. All are heavily patinated and battered and one flake has been truncated by steep retouch.

LOCUS 7

The exact position is not clear from the field notes, but the find-spot was in the same vicinity as Locus 6. One (possibly Levallois) flake and a massive end-scraper were found on the surface, both patinated cream. The end-scraper could be Neolithic.

It had been hoped to continue the study of these sites in a future season, but this never took place. The evidence is rather slender so far, but what can usefully be extracted from it has already been discussed in Chapter 4, at the end of Section I and III, above.

CHAPTER 7

THE PALAEOLITHIC FAUNAL REMAINS FROM ADLUN AND THEIR ECOLOGICAL CONTEXT

by Andrew N. Garrard

The purpose of this chapter is to describe the faunal remains obtained by Garrod and Kirkbride (1961; see also Garrod, 1966a) from their excavations at the Abri Zumoffen and Mugharet el-Bezez, and to discuss their environmental and economic implications. However, before embarking on a description of the material, it would be useful to outline the stratigraphy of the sites and to describe their location and ecological context.

STRATIGRAPHY, SITUATION AND ENVIRONMENT

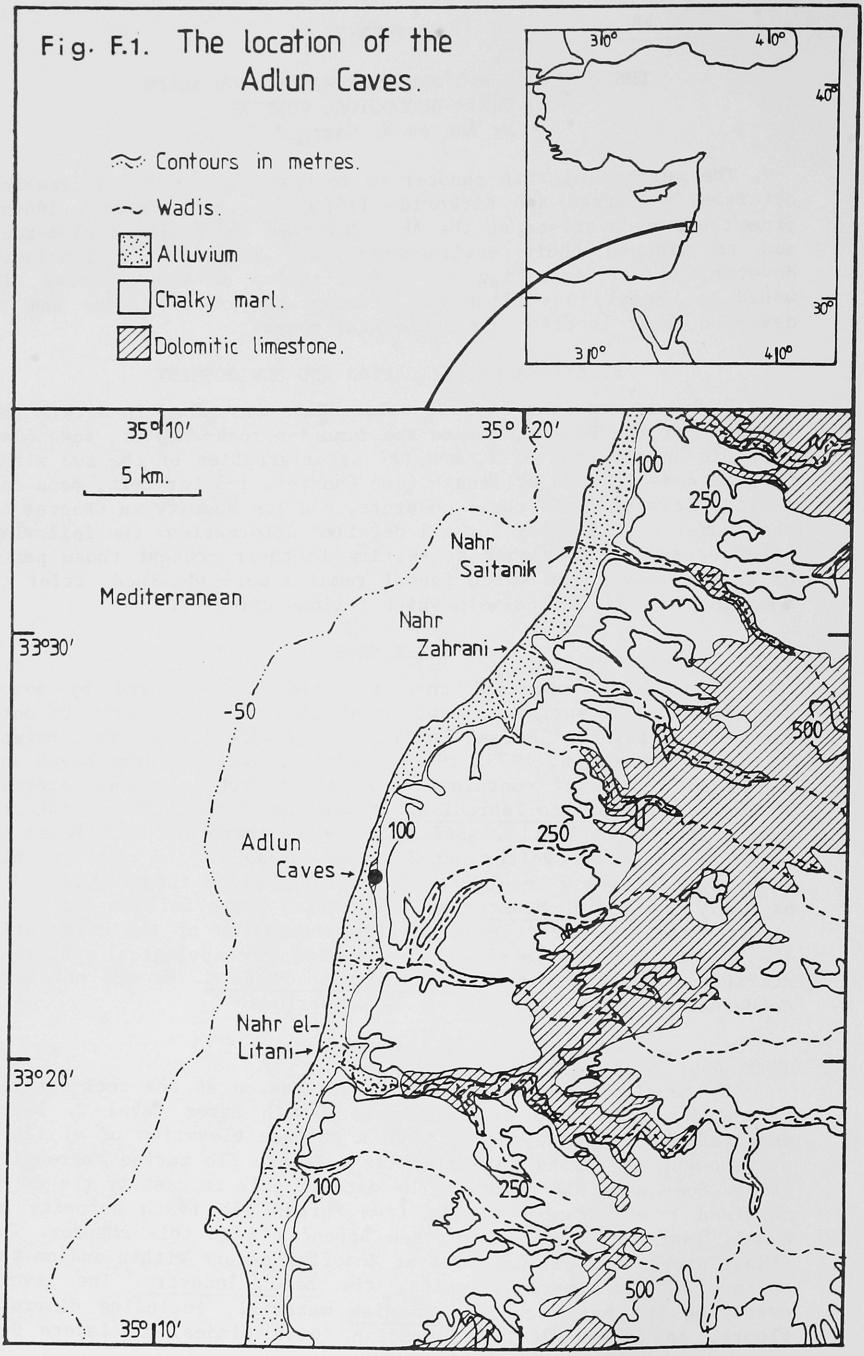
Previous sections of this volume have described in detail the location of the Bezez Cave and the Zumoffen rock-shelter, some 60m. apart in an old sea cliff, and the stratigraphies of the two sites have been dealt with at length (see Chapters 1-3 for text, maps and section drawings). To these chapters, and the summary in Chapter 8, the reader should refer for all detailed information: the following brief statement aims only at setting in their context those parts of the sequence from which faunal remains were obtained, prior to the report on their analysis which follows directly.

BEZEZ CAVE

It will be recalled that the floor is covered by beach deposits with a surface elevation of about 15m., thought to date from the 'Riss/Würm' Enfean Ib marine regression from a full height of 20m. (Sanlaville, 1973; 1977). Level C, overlying the beach and in contact with it, contains the earliest archaeological material at the site, Acheuleo-Yabrudian. It was argued that the prehistoric occupation of the Abri Zumoffen may be contemporary with Bezez C, and that the rock-shelter acted as an annexe to the cave at this time. The overlying Level B at Bezez contains an industry regarded as early Levalloiso-Mousterian. An erosive phase follows and there is no surviving direct evidence for occupation of the cave until the deposition of Level A, containing archaeological material attributed to the Levantine Aurignacian Phase C. We are not here concerned with the Neolithic or later periods.

ABRI ZUMOFFEN

As mentioned above, the whole succession at the rock-shelter is thought likely to be contemporary with Bezez Level C. Beach deposits covering the floor, with a surface elevation of c. 12m., are thought to belong to Sanlaville's Enfean IIb marine regressive stage. Some possible light on the date of this is cast by the dates obtained from *Strombus* shells from Enfean IIb beach deposits at Naamé, just south of Beirut; see Appendix A to this chapter. The oldest archaeological material at Zumoffen occurs within and on the surface of the beach deposits, the Beach Industry. The levels overlying the beach contain Amudian material, including discrete floors, in layers 21-11, Yabrudian (with blades) in layers 9-3


Fig. F.1. The location of the Adlun Caves.
Contours in metres.
Wadis.
Alluvium
Chalky marl.
Dolomitic limestone.
30°
40°
30°
40°
30°
40°
35°10′
35°20′
5 km.
Mediterranean
Nahr Saitanik
Nahr Zahrani
33°30′
-50
Adlun Caves
100
250
500
Nahr el-Litani
33°20′
35°10′

(described by Garrod and Kirkbride, 1961), and Yabrudian (with bifaces) in the terra fusca and surface soil of layers 2 and 1. The Beach Industry and the Amudian are seen as variants of the same industry (Amudian), partly overlapping in time. It is also suggested that at Adlun the Amudian is likely to be an activity facies within the whole Yabrudian stage of the local Middle Palaeolithic, rather than a separate entity.

The faunal remains studied in the present chapter comprise analytically viable samples from Zumoffen 21-11, Zumoffen 9-3 and Bezez B, with smaller quantities from Bezez C and A. They therefore span a substantial range of Upper Pleistocene time, including associations with two major stages of the local Middle Palaeolithic: Amudian/Yabrudian and Levalloiso-Mousterian.

ENVIRONMENT AND ECOLOGY

Adlun lies in a region which currently receives between 600 and 800mm. of rain per annum, most of which falls between November and April. The area has a mean January temperature of between 11.5 and 12°C and a mean August temperature of between 26 and 27.5°C (Pabot, 1959; Boulos, 1963). The coastal plain is at present narrow, rarely exceeding 2km. in width within 20km. of the sites (Fig.F.1; see also Figs.H.2 and H.3). However, from the evidence of fossil beaches it was apparently flooded at intervals during the Yabrudian and Levalloiso-Mousterian periods, whilst during the Aurignacian the sea level dropped below its present level (Sanlaville, 1971; 1973).

To the east of the sites the ground rises slowly. The area within 5 to 10km. radius lies below 250m. and consists of gently rolling hills composed of chalky marls. The marls are impermeable and there are very few springs. They are covered by rendzinas which would probably, by analogy with northern Palestine, support a deciduous *Quercus ithaburensis* - *Styrax officinalis* woodland community in the absence of human disturbance (Zohary, 1962). Within the belt lying between 5 to 10 and 15 to 20km. from the sites, the ground rises to c. 500m. and is composed of dolomitic limestones covered with a light terra rossa soil. This would probably support an evergreen *Quercus calliprinos* - *Pistacia palaestina* woodland community under climax conditions, which would include stands of *Pinus halepensis* and cypresses. Springs are far more abundant in this area and there is presently more settlement than on the marls. Beyond this region the terrain rises to between 500 and 1500m. and then drops dramatically into the rift valley.

A pollen sample has been studied from the Yabrudian levels at Abri Zumoffen (Leroi-Gourhan, 1971; see also Appendix B to this chapter) and it contains c. 35% arboreal pollen. *Pinus* is the most prolific species in this sample representing 13.5% of the overall total, whilst *Quercus ithaburensis* represents 3.8% and *Quercus calliprinos* 0.8%. Pines are known to produce about ten times more pollen than oaks (Wilkinson, 1971), so if one introduces a weighting factor to compensate for this, the significance of *Pinus* is reduced in the spectrum and *Quercus ithaburensis* becomes the dominant species as it would probably be under present climax conditions. Out of the other arboreal species, *Salix* represents

7.2% and the Cupressiformes 4.9%. The former is normally found close to water, so one must assume that running or standing water existed close by in the coastal plain or in an adjacent wadi outlet. The cypresses on the other hand produce large quantities of pollen and may have grown some distance from the sites. Thus the pollen spectrum suggests that the environmental conditions of the Yabrudian period may have been similar to those of the present. This tends to support Sanlaville's (1973) and Copeland's (1975) dating of the Yabrudian complex, including the Amudian, to the last Interglacial.

THE FAUNAL REMAINS - METHOD OF ANALYSIS

A total of 198 bones and teeth were identified from Abri Zumoffen and 259 from undisturbed levels at the Mugharet el-Bezez. Of these, 77 were from Zumoffen 21-11, 121 from Zumoffen 9-3, 49 from Bezez C, 197 from Bezez B and 13 from Bezez A. The material from Abri Zumoffen was initially studied by Hooijer at Leiden, but as his report was limited to a simple list of species present (in Garrod and Kirkbride, 1961, p.41), a fresh analysis was made. The material was identified by reference to comparative collections in the Departments of Archaeology and Zoology at Cambridge and in the British Museum of Natural History in London. A list of the faunal remains identified will be found in Table F.1 and the proportional representation of the various species has been calculated by two methods and presented in Table F.2 and Fig.F.2.

The first method is based on the total number of elements which can be easily identified in all the species present; namely mandibular and maxillary bone and tooth fragments, scapulae, humeri, radii, pelvises, femurs, tibias, metapodials, phalanges, calcanea and astragali. A weighting factor has been used to compensate for the fact that certain species have more of some elements than others. It should be noted that the excavated deposits from the sites were not sieved, so the faunal proportions may be slightly biased in favour of the larger species.

The second method attempts to show potential meat weight yield and has been calculated by multiplying half the average adult live weight of each species by the figures obtained from the first method and then converting to percentages (weights from Garrard, 1980). It is hoped that this will give some guide to the relative economic importance of each species although it is realised that communities may not have made as efficient use of a large carcass, such as that of a 2,500kg. rhinoceros, as they would have of a small carcass, such as that of a 20kg. gazelle. Faunal proportions were not calculated by the "minimum number of individuals" method, because of the small sample sizes (see Payne, 1972). It was thought that this method would have exaggerated the importance of species represented by one or two elements only.

Slaughter patterns within species populations were also analysed, but because of the very small sample sizes, conclusions remain tentative. In Table F.3 the proportion of juveniles to adults has been presented, based on the ratio of deciduous first to third molars to permanent second to fourth premolars. In Table F.4 adult Dama mesopotamica have been divided into further age groups

based on the wear stage of the third mandibular molars. The number of measurable bones in the collection was too small to allow separation into sex groups, but the few measurements obtained from Dama mesopotamica and Gazella gazella have been presented in Table F.5 to allow comparison with material from other sites.

The samples from the sites were also too small to allow a detailed study of butchery practice, but Fig.F.3 has been prepared to show the proportional representation of Dama mesopotamica skeletal elements in different levels. The proportions shown are based on the minimum number of animals represented by each skeletal element. Minimum numbers were used in preference to total numbers because certain elements such as mandibles can be identified from much smaller fragments (i.e. individual teeth) than others such as limb bones.

RESULTS AND CONCLUSIONS

Only three out of the five archaeological levels at the two sites contained large enough samples for statistical analysis of proportional representation. These, in order of succession, were the Amudian of layers 21-11, the Yabrudian of 9-3 at Abri Zumoffen and the Levalloiso-Mousterian of Level B at Mugharet el-Bezez. The woodland species, Dama mesopotamica, is the predominant animal in each of these levels, but shows a steady decrease in percentage through time from 82.2% in Zumoffen 21-11 to 46.6% in Bezez B (see Table F.2 and Fig.F.2). Bos primigenius, which is the second most common species at Abri Zumoffen and which may also have inhabited woodland, also shows a decline between the Yabrudian and Levalloiso-Mousterian levels. Their place is taken by the open country dweller, Gazella gazella, which was absent from the Amudian and Yabrudian samples. There is a similar decline in woodland species and rise in the percentage of gazelle between levels Eb and D at Mugharet el-Tabun on the Carmel coast of Palestine, with which the Adlun deposits are equated (Garrard, 1980; in press). It is thought that this may be related to early Last Glacial desiccation, evidence for which has been described by Goldberg (1976) and Marks (1977) from the central Negev. Overall there is a slightly higher percentage of woodland species at the Adlun Caves than at Tabun, but this may be attributed to the narrower coastal plain, to the more extensive upland to the east of the sites and to the more northerly latitude.

In addition to the above species, small numbers of Capra sp., Cervus elaphus, Capreolus capreolus, Sus scrofa, Equus sp., Dicerorhinus cf. mercki, Lepus capensis, Procavia capensis and Hystrix indica bones and teeth were found in various levels at one or other or both sites, indicating the proximity of a variety of habitats including woodland, crag and open terrain. A large number of carnivore remains were also found in Bezez B and Crocuta crocuta was particularly numerous representing 13.4% of the total sample. It is possible that Crocuta lived in the cave during periods when it was unoccupied by man, but modern evidence from southern Africa suggests that the Spotted Hyaena tends to use smaller caves than Bezez as lairs (Sutcliffe, 1970) and there was no evidence of chewed bone at the site. It therefore seems likely that the hyaena

Site	Zumoffen		Bezez							
Level	21-11	9-3	C			B				A
Period	Yabrudian		Yabrudian			Levalloiso-Mousterian				Aurignacian
Locus	21-11	9-3	D257	D256	M152	M155	M150/1	M149	M147	G40
Bos primigenius										
Mandible/Mandible Teeth	5	9				1				
Maxilla/Maxilla Teeth		2								
Teeth fragments	11	17	10	34		2				
Metatarsal				1		1				
Calcaneum						1				
Navicular-cuboid						1				
Ulna						1				
Phalange 1						1				
Gazella gazella										
Mandible/Mandible Teeth						6				
Maxilla/Maxilla Teeth						5				
Horn Core							3			1
Scapula										2
Humerus						2				
Radius						2				
Pelvis					1					2
Tibia						1				
Metapodial						2				
Metacarpal						2				
Astragalus						2				
Calcaneum						1				
Phalange 1						6				
Phalange 2						1				
Phalange 3						2				
Sesamoid						1				
Capra sp.										
Maxilla/Maxilla Teeth						1				
Horn Core									1	
Ulna										1
Metatarsal										1
Cervus elaphus										
Teeth fragments						1				
Humerus						1				
Dama mesopotamica										
Mandible/Mandible Teeth	31	36				15				
Maxilla/Maxilla Teeth	2					14				
Teeth fragments	16	32				5				
Antler						20	1			
Humerus						2				1
Pelvis							1			
Femur						3				
Tibia						2	1			1
Metapodial	1			1		5				
Metacarpal						3				1
Metatarsal						1				
Astragalus				1		2		1		1
Calcaneum						1	1			
Ulna						1				
Phalange 1	2					11				
Phalange 2	1					3				
Phalange 3										2
Capreolus capreolus										
Mandible/Mandible Teeth		1								
Sus scrofa										
Mandible/Mandible Teeth		1				1				
Maxilla/Maxilla Teeth		1								
Teeth fragments	1	1				2				
Phalange 1						1				
Equus sp.										
Mandible/Mandible Teeth		2								
Maxilla/Maxilla Teeth	1									
Teeth fragments		16								
Dicerorhinus cf. mercki										
Mandible/Mandible Teeth	1									
Teeth fragments	4	2	1							

Site	Zumoffen		Bezez							
Level	21-11	9-3	C			B				A
Period	Yabrudian		Yabrudian			Levalloiso-Mousterian				Aurignacian
Locus	21-11	9-3	D257	D256	M152	M155	M150/1	M149	M147	G40
Panthera leo										
Mandible/Mandible Teeth						2				
Teeth fragments						1				
Radius						1				
Tibia						1				
Metapodial						2				
Phalange 1						3				
Phalange 2						1				
Panthera pardus										
Mandible/Mandible Teeth						1				
Metapodial						1				
Phalange 2						1				
Lynx lynx										
Metapodial						1				
Ulna						1				
Canis lupus										
Mandible/Mandible Teeth						1				
Maxilla/Maxilla Teeth						1				
Vulpes vulpes										
Scapula						1				
Femur						1				
Crocuta crocuta										
Mandible/Mandible Teeth						4				
Maxilla/Maxilla Teeth						5				
Radius						2				
Tibia						1				
Metapodial						9				
Calcaneum						1				
Phalange 1						4				
Phalange 2						1				
Phalange 3						2				
Ursus arctos										
Mandible/Mandible Teeth	1	3								
Radius						1				
Metapodial						1				
Phalange 1						1				
Aves						X				X
Testudo sp.	X	X	X	X		X	X			X

N.B. In addition to the above, Capreolus capreolus, Lepus capensis, Procavia capensis and Hystrix indica were found in disturbed deposits from Levalloiso-Mousterian levels at Bezez.

Table F.1: List of faunal remains from undisturbed deposits at Abri Zumoffen and Mugharet el-Bezez.

Site	Zumoffen		Bezez		
Level	21-11	9-3	C	B	A
Period	Yabrudian		Yabrud.	Lev.Moust.	Aurig.
Bos primigenius	9.1 (31.3)	20.0 (61.7)	+ +	2.8 (21.6)	
Gazella gazella			+ +	22.5 (4.8)	+ +
Capra sp.				0.7 (0.6)	
Cervus elaphus				0.7 (1.0)	
Dama mesopotamica	82.2 (41.0)	65.5 (29.3)	+ +	46.6 (52.2)	+ +
Capreolus capreolus		1.8 (0.2)		! !	
Sus scrofa	x x	3.6 (1.5)		1.4 (1.4)	
Equus sp.	2.2 (2.4)	3.6 (3.5)			
Dicerorhinus cf. mercki	2.2 (23.6)	x x	x x		
Lepus capensis				! !	
Procavia capensis				! !	
Hystrix indica				! !	
Panthera leo				4.9 (6.9)	
Panthera pardus				1.4 (0.6)	
Lynx lynx				1.4 (0.4)	
Canis lupus				1.4 (0.5)	
Vulpes vulpes				1.4 (0.1)	
Crocuta crocuta				13.4 (7.5)	
Ursus arctos	2.2 (1.7)	5.5 (3.8)		1.4 (2.4)	
Sample size	45	55	4	142	10

N.B. () = Meat weight percentages; x = Species only represented by unselected elements; + = Sample size small; ! = Limited to disturbed levels

Table F.2: Proportional representation of species at Abri Zumoffen and Mugharet el-Bezez. Based on selected and weighted numbers of bone and teeth and on relative meat weight yield (see text). Figures are percentages.

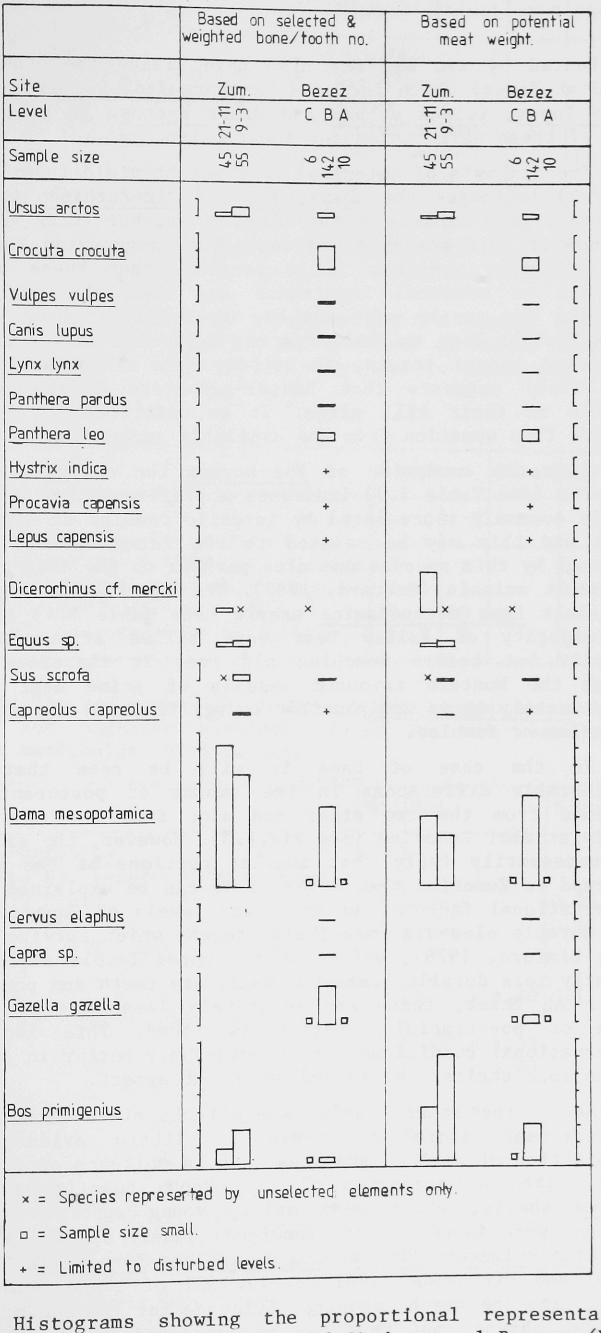


Fig.F.2: Histograms showing the proportional representation of large mammals at Abri Zumoffen and Mugharet el-Bezez. (Vertical divisions = 10%.)

was hunted by man who may also have killed the other carnivores found at Bezez, which included Panthera leo, P. pardua, Lynx lynx, Canis lupus, Vulpes vulpes and Ursus arctos. It is possible that some of these were hunted for their pelts.

The analysis of potential meat weight yield (see Table F.2 and Fig.F.2) indicates that Dama, Bos and Dicerorhinus were the most important game animals at the Adlun sites, but it is very difficult to know if this method of presentation exaggerates the importance of the larger species. It is possible that these were only of sporadic or seasonal importance and that the smaller animals provided the staple meat supply. On the other hand the meat and bones brought back to the sites may represent only a small part of the total animal intake, as contemporary ethnographic work (e.g. Lee, 1968) suggests that hunter-gatherers often consume large animals at their kill sites. It is unfortunately impossible to resolve this question from the available archaeological data.

With the exception of Sus scrofa the analysis of slaughter patterns (see Table F.3) indicates a preference for adult animals. Pig is commonly represented by juvenile remains at other Levantine sites and this may be related to the large number of offspring produced by this species and also perhaps to the dangers of hunting the adult animals (Garrard, 1980). The age classes represented in the adult Dama mesopotamica sample (see Table F.4) indicate that the majority of Fallow Deer were killed after reaching full maturity but before reaching old age. It therefore appears as though the hunters favoured animals of prime meat weight, but unfortunately it is not possible to say if there was any preference for males or females.

In the case of Dama it will be seen that there are considerable differences in the amount of postcranial material obtained from the two sites and also from the upper and lower levels at Abri Zumoffen (see Fig.F.3). However, the differences do not necessarily imply that smaller portions of the animals were returned to Zumoffen than Bezez. They can be explained in terms of preservational factors. In the lower levels of Zumoffen it is the most durable elements (mandibular teeth) which survive (cf. Brain, 1976; Binford, 1978), whilst in the upper levels small numbers of slightly less durable elements (maxillary teeth and phalanges) also occur. At Bezez, teeth are relatively less numerous and a wide range of postcranial material is found. This indicates that preservational conditions were considerably better in the cave than in the rock shelter, as indeed one might expect.

As at the other Middle Palaeolithic sites along the eastern Mediterranean shoreline, there is little evidence for the exploitation of marine resources such as molluscs or fish (Garrard, 1980). With the exception of an unknown quantity of Columbella rustica shells, which were mainly young specimens, only three molluscs were found at Abri Zumoffen; namely single individuals of Cerithium vulgatum, Phasianella pullus and Turritella (Lecointre in Garrod and Kirkbride, 1961, p.41). All of these could have been washed into the beach deposits. Evidence for the use of plant foods was also absent, but this can be accounted for by preservational factors and the possibility of their utilisation should not be

Species	Site	Level	ml-3	P2-4	Total
Bos primigenius	Zumoffen	21-11		2	2
	Zumoffen	9-3		4	4
Gazella gazella	Bezez	B		2	2
Dama mesopotamica	Zumoffen	21-11	1	6	7
	Zumoffen	9-3		15	15
	Bezez	B	1	8	9
Capreolus capreolus	Zumoffen	21-11		3	3
Sus scrofa	Bezez	B	2		2
Dicerorhinus cf. mercki	Zumoffen	21-11		2	2

Table F.3: The proportion of juveniles to adults in the main herbivores from Abri Zumoffen and Mugharet el-Bezez. Based on the ratio of deciduous first to third molars to permanent second to fourth premolars.

Site	Zumoffen		Bezez	Age
Level	21-11	9-3	B	
No. Md. M3 unworn or worn on 1-2 cusps	5	1		c. 2 years
No. Md. M3, partial wear on 3 cusps	1	3		
No. Md. M3, full wear on 3 cusps	10	10	2	c. 3 years
No. Md. M3, advanced wear on 3 cusps	1	2		c. 8 years

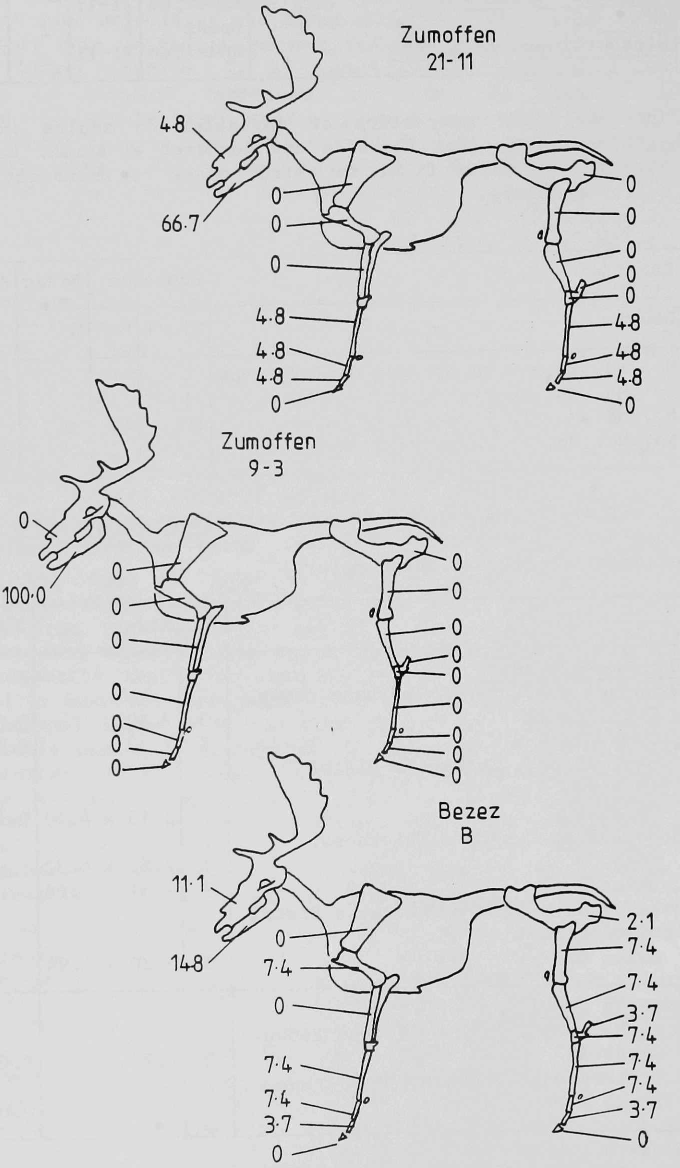
Table F.4: The age spread in adults of Dama mesopotamica from Abri Zumoffen and Mugharet el-Bezez. Based on the wear stage of permanent mandibular third molars.

	No.	Mean	S.D.
Dama mesopotamica			
Mandibular M3. Length at base crown.			
Zumoffen 21-11	3	2.40	0.05
Zumoffen 9-3	7	2.32	0.14
Tibia. Width x Thickness Distal Epiphysis.			
Bezez B	2	3.13 x 4.10	0.11 x 0.10
Astragalus. Length x Thickness.			
Bezez B	1	2.52 x 4.32	
Bezez A	1	2.51 x 4.08	
Metacarpal. Width x Thickness Distal Articulation			
Bezez B	1	3.20 x 1.94	
Gazella gazella			
Mandibular M3. Length at base crown.			
Bezez B	2	1.75	0.03
Maxillary M3. Length at base crown.			
Bezez B	2	1.41	0.05

Table F.5: Measurements of Dama mesopotamica and Gazella gazella specimens from Abri Zumoffen and Mugharet el-Bezez. Expressed in cm.

Fig. F.3. The proportional representation of skeletal elements in <u>Dama mesopotamica</u> from Abri Zumoffen and M. el-Bezez.

(figures are %s)



dismissed. With the exception of groups living in arctic latitudes, there is no historically or recently observed hunter-gatherer community which has lived entirely off animal foods. The only groups which have been observed living in an environment akin to the eastern Mediterranean are the pre-European inhabitants of "Mediterranean" (in the climatic sense) California. The Calmilla, living without freshwater or marine resources, depended for about 60% of their diet on gathering and the Coast Yuki and Lake Yukots ate a similar percentage of plant foods (Lee, 1968). As Zohary (1973, chap.20) has indicated, a considerable number of highly nutritious, edible, wild plants are available in the Near East.

Finally, it is important to point out that the Adlun sites may only have been occupied on a seasonal basis. Most recent hunter-gatherer groups have undertaken some seasonal movement, partly to follow shifting resources, and also to prevent depletion of food stocks in favoured areas. At present the only Yabrudian or early Levalloiso-Mousterian sites known from the Lebanon are located along the coastline (Hours, 1973). However, the presence of contemporary sites with similar industries in the Wadi Amud in north-eastern Palestine at Yabrud and el-Koum in Syria (Copeland and Hours, 1981) demonstrates that the populations of this period were exploiting a variety of habitats and resources.

APPENDIX A

THE MOLLUSCAN FAUNA OF THE *STROMBUS* BEACH AT NAAME
compiled by L. Copeland from work by P. Elouard

Thermophile molluscan fauna, such as *Strombus bubonius* Lmk., had already been reported by Wetzel and Haller (1945) from along the northern Lebanon littoral, in raised beach deposits at altitudes of c. 6 - c. 15m. It is only recently that *Strombus* has been found in sites along the southern coasts, by B. Lauriol and P. Sanlaville, one of which (Naamé) was also a Levalloiso-Mousterian occupation site (Fleisch and Sanlaville, 1967; Fleisch, Comati, Reynard and Elouard, 1971). In the Adlun region there are three findspots, Ras Qantara to the north, Minet Abu Zaid to the south, and Minet Abu Zebal directly west-north-west of the prehistoric sites; the last named is a small inlet, and the mouth of a minor wadi, which drains the high ground immediately above the cave sites (Sanlaville, 1977, p.698).

The molluscan fauna in the Upper and Lower Beach in Trench A at Abri Zumoffen is reported by Lecointre (in Garrod and Kirkbride, 1961) to have been banal, and included *Columbella rustica*, *Cerithium vulgatum* and *Turritella*.

The fauna from the *Strombus* beach at Naamé, c. 45km. to the north of Adlun, under the occupation horizon was a dead assemblage which included animals from different biotopes. The following information is taken from the report published by Reynard and Elouard (in Fleisch *et al.*, 1971). The spellings are as printed in the article:

a) There were 12 species which occur today both in the Mediterranean and on the west coast of Africa:

Dosinia lupinus L
Dosinia exoleta L.
Venus verrucosa L.
Chama gryphoides L.
Patella coerulea L.
Bittium reticulatum D.C.
Cerithium vulgatum Brug.
Cypraea lurida L.
Murex trunculus L.
Thais haemastoma L.
Columbella rustica L.
Conus mediterraneus Brug.

b) There were nine specimens which live today on the west coast of Africa but not in the Mediterranean (the most abundant being *Strombus*, represented by 1067 individuals):

Arca afra Gm.
Tapes dura Gm.
Strombus bubonius Lmk.
Natica (Polynices) lactea Guild.
Natica turtoni E.A. Smith
Cymatium costatum Born
Bursa pustulosa Reeve
Cantharus viverratus Kien
Conus testudinarius Wass

c) There were nine species living today in the Mediterranean but unknown on the African coast:

Glycymeris violacescens Lmk.
Cardium tuberculatum L.
Spondylus gaederopus L.
Donax trunculus L.
Monodonta turbinata Born.
Gibbula adansoni Payr.
Clanculus corallinus Gm.
Natica josefina Ris.
Murex aciculatus Lmk.

It may be of interest to record here the details of the Th230/U234 dates for Strombus shells obtained from Naamé:

1) Lamont laboratory, 90,000 ± 20,000 years (Sanlaville, 1971)

2) Gif-sur-Yvette laboratory, 93,000 ± 5,000 years (Leroi-Gourhan, 1980, p.83, quoting a communication from Hoang Chi Trach).

APPENDIX B

A POLLEN SPECTRUM FROM THE YABRUDIAN OF ABRI ZUMOFFEN
prepared from notes submitted by Arlette Leroi-Gourhan

A pollen sample from Abri Zumoffen has been published by Arlette Leroi-Gourhan (1971) which was taken from Trench A, square T at a depth of c. 70cm. Although it is not absolutely certain, we judge the layer to have been Yabrudian, between 2c and 5; the following species were found:

Arboreal
Pinus, 13.5%
Cedrus, 0.5%
Cupressus, 4.9%
Acer, 0.2%
Crataegus, 0.2%
Fraxinus, 0.8%
Juglans, 0.2%
Myrtus, 0.8%
Quercus sp., 1.2%
(infectoria? brantii?)
Quercus ithaburensis, 3.8%
Quercus calliprinos, 0.8%
Rhamnaceae, 1.2%
Salix, 7.2%
Total percentage: 35.3%*
Sample size: 349

Non-arboreal
Graminae, 12.5%
Graminae, cereal type, 0.2%
Compositae ligul., 23.3%
Poterium spinosum, 2.8%
Compositae tub., 8.9%
Dipsaceae, 4.3%
Ephedra typ. frag., 2.0%
Umbelliferae, 3.1%
Plantago, 0.2%
Urticaceae, 0.2%
Spores, 0.2%
Total percentage 57.7%*

This is interpreted by Leroi-Gourhan as indicating a cold (or wet) climate, since Mediterranean tree types are so rare and the AP percentage is relatively high. She also notes that the sample is perfectly homogeneous, ruling out the possibility of disturbance in the layers.

* The percentages, as published in the 1971 article, add up to 93.0%.

CHAPTER 8

RESULTS, TENTATIVE INTERPRETATIONS AND SUGGESTED CHRONOLOGY

by D. Kirkbride, S. de Saint-Mathurin and L. Copeland

Our guiding principle has been to regard the Adlun sites as together forming one entity, a large prehistoric station with several phases of occupation. Before setting out our general conclusions, we review here the results of the work done and discuss the main features and chronology of each site in a wider perspective.

Although we have no radiometric dates for Adlun, as Garrard has pointed out dates from nearby sites provide a general framework, particularly those from shoreline features, such as Strombus beaches, whether in the Levant or elsewhere in the Mediterranean. The Table in R.1 has been constructed by combining the geochronological and archaeological evidence to give a suggested chronology and Quaternary framework for the Adlun Middle Palaeolithic sequence.

However, it will readily be understood that when one is dealing with a precise series of thin occupation layers and wishes to relate them to large blocks of time such as marine cycles, the exact 'fit' must be largely hypothetical and various different arrangements of the data could be suggested. We are not alone in facing such difficulties; see the alternative chronologies for Qafzeh Cave suggested by Bar Yosef and Vandermeersch (1981). At Adlun, for example, one of the many problems which remains to be solved concerns the placement of the two beach episodes in each Abri Zumoffen trench in relation to the three episodes at Minet Abu Zebal; the two possible arrangements appear in Table R.1. Another problem concerns the fact that no Strombus shells were reported from the actual area of the Zumoffen shelter, the nearest occurrence being about 400m. distant. Perhaps the most important gap in our present knowledge is the position of the bedrock under the Abri Zumoffen trenches, and the nature of any deposits that may lie between it and the Beach Industry; since the marine abrasion-platform has been described as polygenic and polychronic, it is possible that not only the Enfean but also previous transgressions might be involved. These uncertainties make the loss of the vermettid sample from Bezez breccia BBg at 16.50 - 17m. above sea-level all the more regrettable, as it might have provided an absolute date.

In spite of such problems, it is by accepting the bulk of Sanlaville's conclusions on the local Pleistocene sequence and by using the known typological succession of industries in the Levant as a whole that we have arrived at the scheme set out in Table R.1. We will discuss it site by site, and level by level, from oldest to youngest.

THE YABRUDIAN PHASE: 1. BEZEZ C

According to the work of Sweeting (this volume) and Sanlaville (1977), the occupation of Bezez C probably began after the cave mouth broke open and with the retreat of the Enfean IB sea from its

Period / date	Marine chronology and dates	BEZEZ CAVE	ABRI ZUMOFFEN Trench B	ABRI ZUMOFFEN Trench A	THE TERRACE Trench C	Comparative typology and Th/U dates
FINAL PART OF LAST INTERGLACIAL OR EARLY PART OF LAST GLACIAL 90,000 years BP	NAAMEAN TRANS- GRESSION to 10.50m. Vermets at Naamé Th/U date: 90,000 ± 10,000 BP		Terrace: planed-off by sea below 10.50m.		Nick on layer 1 Vermets?	(Tabun C) Rosh Ein Mor NAHAL AQEV D: 85,200 ± 10,000 BP 74,000 ± 5,000 BP
		Level B: LEVALLOISO- MOUSTERIAN				Tabun D Yabrud I, 10-8
		?Hiatus (Sterile layers in G and D)	Layer 2: <u>terra fusca</u> YABRUDIAN with bifaces and blades	Layer 2: <u>terra fusca</u> YABRUDIAN with bifaces		
			Layer 3: grey breccia YABRUDIAN with blades	Layers 3, 5, 7: yellow soil YABRUDIAN with blades		Transition, Tabun Ea Ea to D? Abu Sif C Hummal II?
	Occupation of Naamé ("Phase 2")		Layer 4: grey breccia YABRUDIAN/AMUDIAN	Layer 9: grey soil YABRUDIAN/AMUDIAN		
c. 100,000 years BP	EOWÜRM retreat		Layer 5: brown earth AMUDIAN with <u>racloirs</u> Layer 6: grey breccia AMUDIAN Layer 7: hearth AMUDIAN Layer 8: sandy pink breccia AMUDIAN with BEACH elements	Layers 11, 13, 15, 17, 19, 21: AMUDIAN separated by calcrete bands	Layer 1: grey breccia AMUDIAN with BEACH elements	ZUTTIYEH upper 97,00 ± 10,000 BP Tabun Ea-Eb Yabrud I, 15-13
SECOND PART OF LAST INTERGLACIAL c. 105,000 years BP	ENFEAN IIB TRANSGRESSION to c. 13m. Retreat		Beach at c. 12m.	Beach at c. 12m. BEACH INDUSTRY	Layer 2: sandstone beach c. 12m. AMUDIAN with BEACH elements (Redistributed from layer 3?)	
				Red clay, with indeterminate flints	Layer 3: land surface AMUDIAN with BEACH elements	
c. 110,000 years BP	ENFEAN IIA TRANSGRESSION to c. 10m. with <u>Strombus bubonius</u> &c Th/U dates at Naamé: 1:93,000 ± 5,000 BP 2:90,000 ± 20,000 BP	Level C: ACHEULEO-YABRUDIAN	[Alternative position of 12m. beach (Sanlaville, 1977)] unexcavated	[Alternative position of 12m. beach and BEACH INDUSTRY (Sanlaville, 1977)] unexcavated	Layer 4: pebble beach c. 11m. BEACH INDUSTRY unexcavated	Masloukh? Yabrud I, 18-16? Tabun Eb Yabrud I, 25-22?
Before 120,000 years BP	Retreat ENFEAN IB TRANSGRESSION to c. 20m. ?ENFEAN IA TRANSGRESSION	Beach left in cave at c. 15m.				Tabun Ec? UMM TLEIL (El-Koum) 139,000 BP (Ach./Yab.) ZUTTIYEH lower 148,000 ± 6,000 BP HUMMAL Ib 156,000 BP (Yabrudian) (Tabun F - Ed?)

Table R.1: Suggested chronology for the earlier industries at Adlun. In the four central columns, the stratigraphic sequences defined by Garrod and Kirkbride are set out. In the left-hand column, the Adlun marine sequence, as interpreted by P. Sanlaville, is fitted on to the archaeological one, with alternative positions for the Beach Industry added (in boxes) into the central columns. In the right-hand column are noted other industries in other sequences which we regard either as being contemporary (capital letters, with dates) or typologically similar to the facies in our sites (sites in brackets are not typologically similar to facies at Adlun).

c. 15m. level; the shore was not far away, and the coastal plain remained narrow or almost non-existent in the region of the headland. At Tabun, the date for the equivalent event suggested by Farrand (1978, Fig.2, Part 1) is c. 120,000 to 110,000 years B.P. From the cultural point of view, Uranium/Thorium dates from Zuttiyeh (148,000 ± 6 ka; Schwarcz et al., in press) and Hummal Ib at El-Koum (156,000 ± 16 ka; G.J. Hennig, pers.comm.) for Acheuleo-Yabrudian samples suggest that, at least inland, Acheuleo-Yabrudian industries were already in existence by this time.

The topographic position of Bezez Cave on a promontory commanding the coastal plain, its relatively spacious interior and the apparent patterning of cultural material, when considered together with the presence close by of several smaller sites, all indicate that Bezez C represents an Acheuleo-Yabrudian 'base camp' in the sense of L.R. and S. Binford. According to their criteria, a base camp would be

> ...selected primarily in terms of adequate life-space, protection from the elements, and central location with respect to the distribution of resources. The archaeological assemblages of base camps should reflect maintenance tasks - the preparation and consumption of food as well as the manufacture of tools for use in other locations.
>
> (Binford and Binford, 1966, pp.268-9)

Bezez C would seem to fulfil most of these conditions. The data recovered so far provide few clues as to the system of settlement - that is, the duration of occupations, whether permanent or seasonal, and the number of individuals involved. Nevertheless, we have some ideas as to site-use alluded to in the first two sections of Chapter 4: we could assume that the tool density in the mouth area reflects its advantages - the light is better here, it lasts longer, and the approaches to the cave can be kept under observation. We may wonder whether the entrance fires were built for reasons of defence, and to what extent the tasks done here with racloirs were connected with these fires. Traffic between this area and neighbouring Abri Zumoffen may be indicated by the presence of massive bifaces and perhaps roughed-out pieces made of Nummulitic flint, which (as we saw in Section II of Chapter 4) could have been knapped on the marine terrace.

As to the central area, the greater thickness of the deposits here, when in place, may represent a more intensive use in a variety of ways, and possibly (cf. some superpositions in the G units) at different times, of the most spacious part of the cave. The fact that Bezez opens in a south-westerly direction into the prevailing wind (at least as it is today: Emery and George, 1963), may explain the presence of ash and carbon chips in the G layers: they may have blown into the interior from the entrance fires. There was, however, at least one hearth at the base of G (see p.31, Chapter 3).

The abrupt change in the proportions of artifacts seen in Trench M at the rear, which set it apart from the other layers, may perhaps merely reflect the greater distance between G and M than

between G and D, especially if an intervening (?transitional) deposit was lost in the swallowhole, Trench S. The use to which this rear zone was put remains unclear; curiously enough, as we saw in Section III of Chapter 4, it was extensively used by the succeeding Levalloiso-Mousterian.

The Level C material can, as a whole, be compared to that found in other sites of the Yabrudian phase. Its main features are:

1) It has a component of bifaces of various well known Late or Final Acheulean categories, in low to moderate number, though, unlike the Tabun Yabrudian, Micoquian types are rare and so are discoidal forms.

2) The main emphasis is on flake-tools, most of which are racloirs. These occur in great variety, and include transverse, offset and bifacial types. Many are retouched in Quina fashion, but the majority have flat 'Mousterian' retouch.

3) Other tools include moderate numbers of denticulates and knives, and low numbers of heavy-duty pieces, Levallois pieces, and Upper Palaeolithic types.

4) Stylistic traits include frequent thinning of the butt, the use of natural backs and méplats, and an apparent lack of concern over the form of tool blanks, upon which the desired edge-form is achieved by retouch, unassisted by prior preparation of the core. The finest edges seem to have been achieved by crushing.

5) Prepared core flaking techniques were, however, known and occasionally used.

6) The débitage is mainly non-Levallois but a small component of blades of Levallois type is present.

Turning to the subject of the three Acheuleo-Yabrudian variants in Level C, it will be recalled that these are laterally disposed, a racloir-dominated facies occurring in the mouth of the cave, another with more numerous bifaces in the central area, while a third assemblage, less distinct typologically, occupied the rear portion of the cave (for details, see pp.158-9 above). It may be argued that the variations are slight or not statistically significant, given the often very small samples; we would agree, wishing only to point out that similar statistics have, in the past, formed the basis on which such conclusions were reached. In any case, the 'variants' explanation does not seem applicable to Bezez C if it means that the variants represent separate groups which occupied different parts of the cave at the same time, and some other solution must be sought.

In order to test the possibility that, at Bezez, the variability could be explained in terms of activity zones, seriation diagrams were drawn up (Figs.R.1 - 3). In R.1 the techniques of débitage are plotted against their position in the cave and we see that the flake/blade percentages and Levallois/non-Levallois percentages shift only to a negligible degree. If knapping techniques can be taken to indicate cultural traditions, then the culture is comparable all over the cave area. In contrast, Fig.R.2 shows that a change in the amount of tools in relation to

TECHNIQUES OF DEBITAGE

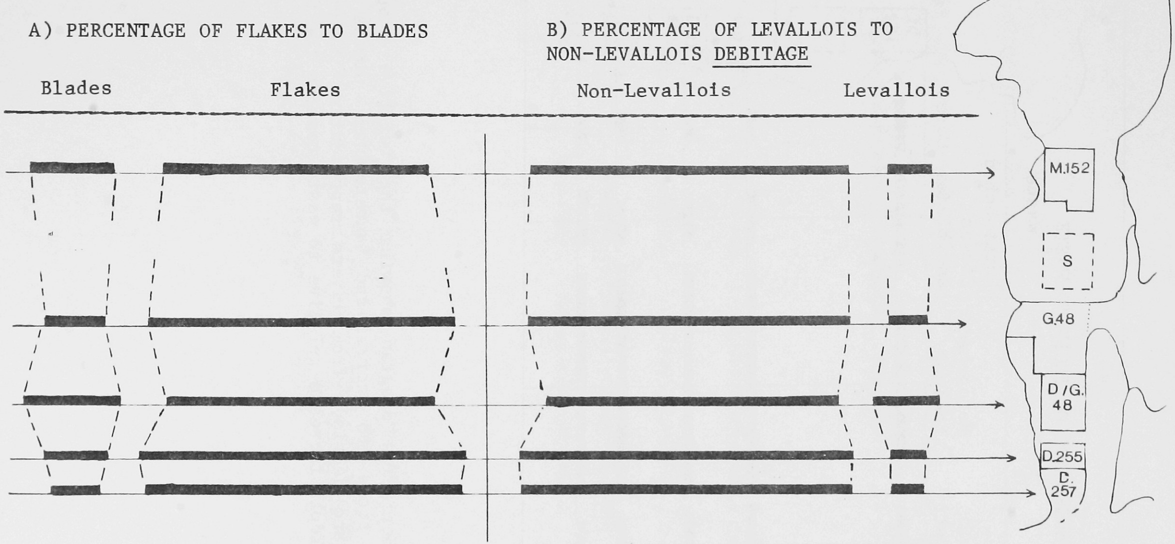


Fig.R.1: Seriation diagram to show proportions of débitage techniques in layers which represent various parts of the cave. In A) there is a slight increase in flakes toward the front, but in B) there is almost no change. The horizontal percentage-bar is drawn opposite the layer to which it refers in the cave, sketched to the right.

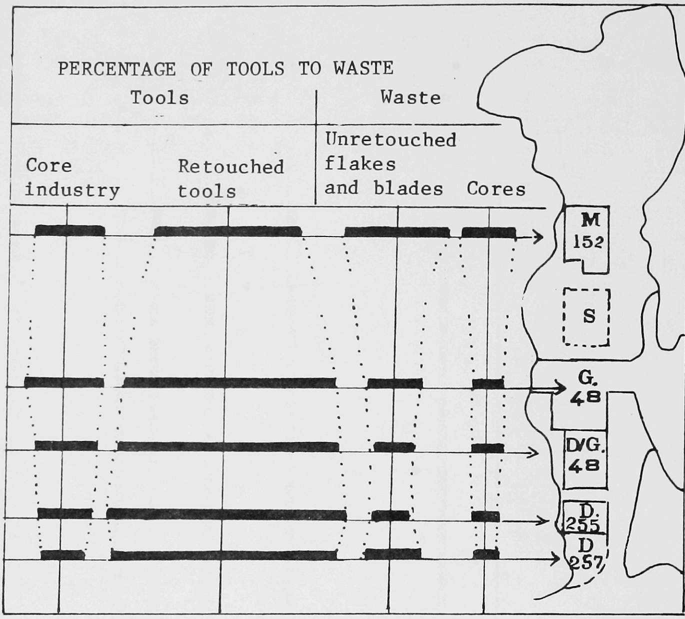


Fig.R.2: Seriation diagram showing the relative proportions of retouched tools to cores and unretouched pieces (excluding fragments and débris), from layers representing various parts of the cave. Tools increase relative to waste towards the front.

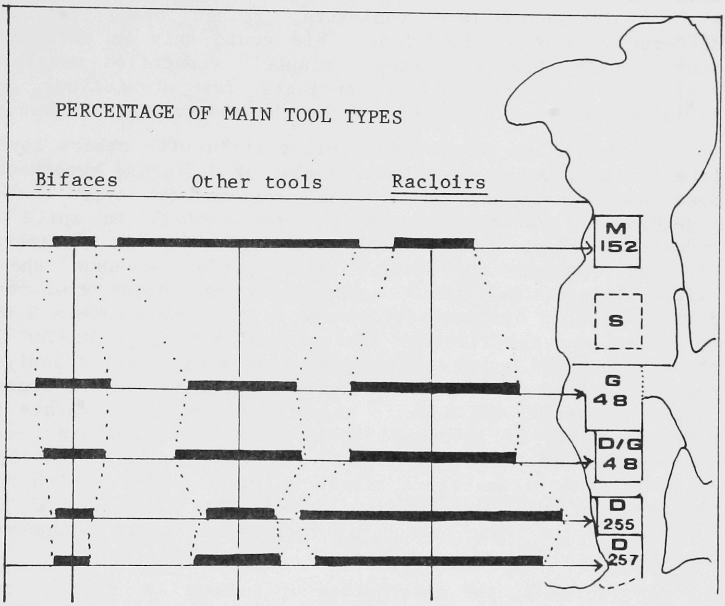


Fig.R.3: Seriation diagram showing the relative proportions of main tool-types in layers representing various parts of the cave. There is an increase of racloirs towards the front relative to the other tools, except for the bifacesl the proportions of those change little, although there are more in Trench G.

waste occurs from front to back of the cave. This would perhaps be related to function. Fig.R.3 illustrates the decline of racloirs towards the back and the prevalence of bifaces in the central area. These, too, might represent functional shifts, so that it could be argued that the Level C variants represent activity-zones with their appropriate tool-kits, rather than, for example, different hominid occupations. This could only be established or disproved by obtaining larger, minutely stratified samples which would be more appropriate subjects for statistical analysis including tests of significance for the observable differences.

In comparing the above interpretation with others applied to Levant sites, we can see that a number of differing hypotheses have been used. At Tabun, the original sequence of Layers G to B was regarded as evolutionary, in the sense that, in spite of the industrial fluctuations which were reported (both lateral and vertical: Garrod and Bate, 1937, p.67), somehow the Lower Palaeolithic facies in G underwent a continuous transformation during the span of time represented by the Tabun Layers G - F - E to become a very different (Mousterian) entity in D. The Tabun E phase, now going under the X-ray of fine stratigraphic analysis, is beginning to reveal the 'bones' of this process. At the moment, the latest excavator, while he is able to distinguish separate lenses, some of which, if isolated, could be said to contain 'Amudian', 'Yabrudian', 'Acheuleo-Yabrudian' or 'Acheulean', thinks of these as comprising ultimately a single cultural entity, which he calls the Mugharan Tradition (Jelinek, 1981). This is a kind of "lumpers' model", but the logic behind his proposal is amply demonstrated in his tables and figures for Units XIII - X (ibid.).

At Yabrud I, the alternation of industries has been taken by Rust (1950) and others to represent short visits by different groups. In this "splitters' model", each cultural group is assumed to be following its own route through the Middle Palaeolithic independently of its contemporaries. Given the very different environmental situation at Yabrud, the discontinuous stratigraphy at Shelter I and (we suggest) the presence of demonstrably different cultural groups in regions to the north and east, some such process might well have obtained there. Such considerations and such an hypothesis do not however seem to apply to Bezez C.

Although at Bezez C any model must differ from those at the other two sites, since the facies seem to be laterally disposed, the Tabun model can perhaps prove useful if one takes into account the hints of lateral differences at Tabun. If it is accepted that Jelinek's Mugharan Tradition (depending on the presence of similar technical traditions and types throughout Units XIII-X/Tabun E) represents a single cultural group, then, as we have argued, the same situation is encountered in Bezez C, where the lateral differences are explained as specialised tool-kits. We could, therefore, be said to be proposing a functional model for Bezez C as a whole, within the Yabrudian and therefore perhaps even within the Mugharan Tradition.

THE YABRUDIAN PHASE: 2. ABRI ZUMOFFEN

The sea appears to have returned to, and oscillated around, a c. 12m. level during the Enfean IIa (the Strombus beach phase) and Enfean IIb phase, only making a substantial retreat at the start of the Last Glacial. There are differences of opinion as to the date of the Enfean II. We may consider a new U/Th date for the Strombus beach at Naamé (the site was discussed on p.000 above) of 93,000 ± 5,000 years (Gif-sur-Yvette laboratory; Leori-Gourhan, 1980, p.83). This does confirm that of the two marine beaches at Naamé, the Strombus one is somewhat older. It will be recalled that dates of around 90,000 were at first obtained (Sanlaville, 1977) for both the Strombus and the vermettid (Naamean) beach at Naamé, but that the former had a larger margin of error (±20,000 years) and might date anywhere between 110 - 70,000 years. In any case, workers such as C. Stearns (pers.comm., 1972), P. Sanlaville (1981, p.29) and W. Farrand (1977; 1978) consider that pre-Naamean Strombus beaches probably date to c. 120,000 - 100,000 years, on evidence from elsewhere in the Mediterranean. If so, the Beach Industry and Amudian at Abri Zumoffen should belong broadly to this period; it is difficult to know whether the 12m. level with which we are concerned at Zumoffen should be placed in the Enfean IIa or Enfean IIb phases, and both alternatives are presented in Table R.1. In any case, it is suggested that both Zumoffen Cave and the rockshelter were occupied as soon as the falling sea-level permitted.

If it is accepted that the largest Adlun site, Bezez, was the base camp, it would be logical to expect that examples of the whole cultural repertoire of the Yabrudian phase flint-knappers would be present there, while small assemblages (representing the manufacture or use of specialised tool-kits) might occur in the vicinity. As the Binfords put it, such lesser sites might be 'work camps', occupied by smaller units of the overall population, and at such locations we would

> ...expect the archaeological assemblages to be dominated by the tools used in the specific extractive tasks. The degree to which maintenance activities may be represented at work camps would be a direct function of the length of time a given social unit was there and of the size of that unit.
>
> (L. and S. Binford, 1966, p.268)

We suggested in Section II of Chapter 4 that the assemblages known as the Beach Industry and the Amudian at Abri Zumoffen could represent tool-kits used in such a work camp though, since it is so close to the main site, perhaps we should regard it simply as an annexe to the latter where special tasks were carried out (perhaps intermittently), involving a limited range of tool-types.

Also mentioned was the suggestion of Garrod and Kirkbride in 1961 that the rockshelter represented an occupation by a different group enjoying what it afterwards became fashionable to call a symbiotic relationship with the Yabrudian population of Bezez. In this case, on analogies with modern examples of symbiosis known to exist in the Near East and Africa, the Amudians would most probably

have been practising a way of life which did not interfere with that of the Yabrudians, one which probably was mutually advantageous.

We ourselves are inclined to prefer the first of these two hypotheses, though the second still remains tenable. Whichever is the right explanation, the data recovered from the shelter and the terrace indicate that:

1) Apart from more abundant chopping-tools, the Beach units contain essentially the same tool-types as those of the Amudian, but the latter have a stronger 'Upper Palaeolithic' component. The opinion of the excavators, that the Beach Industry is simply a variant of the Amudian, is confirmed by our analyses of the artifacts.

2) During the Beach phase, two distinct flint-knapping activities were being carried on in the shelter and terrace area. One was the knapping of large Nummulitic flint artifacts, which we deduce from the characteristic waste products, though since the implements themselves are not actually present, this must remain a hypothesis. At the same time, neat, small blades were being struck from cores of appropriate brown flint, as blanks upon which most of the existing tools were fashioned. Since the two components are associated stratigraphically, their functions may well have been complementary.

3) The Amudian resembles typologically some Upper Palaeolithic industries. We believe that this is partly due to the reduced dimensions of the cores and blades which, if larger, would look typically Lower or Middle Palaeolithic, and also partly to the presence in concentration at Zumoffen of certain 'Upper Palaeolithic' tools. It is important to note that the latter are to be found widely within Levantine Lower and Middle Palaeolithic industries, though usually only in small quantities. If there are no really novel elements at Adlun, it is certainly true that there is a striking emphasis on tool-types which did not become the norm in our region until (according to our reckoning) some 60,000 years later.

4) The differences between the Amudian and the Pre-Aurignacian of other authors at other sites are great enough (cf. Fig.Z.7) to warrant the keeping of the two separate names. The term Pre-Aurignacian should not be applied to Abri Zumoffen's Amudian. However, Jelinek's retention of the Amudian label for the material of certain Tabun E lenses seems amply justified.

THE YABRUDIAN PHASE:
3. OTHER YABRUDIAN OCCURRENCES AT ADLUN, AND GENERAL CONSIDERATIONS

The ruinous or disturbed condition of the remaining sites in the Adlun Promontory prevents us from gaining much additional information. There are hints that a good stratigraphic sequence once existed at the High Cave south of Bezez, with the Yabrudian artifacts found at a lower altitude than those of Levalloiso-Mousterian aspect. The stratigraphy in Zumoffen Cave was destroyed by the site's owner, but must originally have included material contemporary with the earliest phase of occupation on the terrace -

i.e. the Beach Industry. At the mouth of Bezez Cave itself, there are clear signs from the breccias that the Yabrudian deposits once continued to a higher level than can be seen today (perhaps another 25cm., according to Kirkbride; see above, p.28).

At Abri Zumoffen the Yabrudian layers which overlay the Amudian (not dealt with in detail in this volume because they were carefully described in the 1961 report) were embedded in a grey breccia without clear stratification; we have outlined the main features of this material. Above the breccia, in the terra fusca originating from the dismantled breccia below, occurs the latest Yabrudian material on the terrace. Judging from a study of the results of Zumoffen's fouilles fructeuses (1900, p.7) this material is more in the style of the Bezez C layers than was that in the underlying layers of Trench A, 9-3; this can be seen from a study of Zumoffen's collection, kept in the Université St Joseph Museum.

All these manifestations, added together, give the impression (though they do not prove) that the sequence in Level C times was longer and more complex than might appear at first glance. Looking at Adlun as a whole, it is easy enough to believe that the quite varied Yabrudian and Amudian material distributed around the promontory is the equivalent of substantial sequences at other Yabrudian Phase sites which (as excavated) are seen in the form of vertical columns with alternations of facies. We, however, lack the chronological evidence and stratigraphic links that would enable us to perceive what segments of time all of our scattered occurrences actually occupy.

There may be a connection between the ecological situation of Bezez and the industrial variants. The cave is located at a spot where at least three food resource zones could be exploited. Foothill and mountain faunal species inhabited the area immediately to the east, while to the south and west stretched the coastal plain, wide during regressions and narrower during transgressive phases. The third, marine, source was available throughout. This tallies with the considerable variety of species found by Garrard (see Chapter 7) in the deposits, with Bos dominating in Level C. However, we are not in a position to attribute specific variants to the exploitation of particular resources. Microwear analysis might one day provide relevant data.

It is reasonable to wonder why, if the site were so advantageously placed, the Acheuleo-Yabrudian deposit is so thin in comparison with Layer E at Tabun. Even if the deposits of Abri Zumoffen are added, the total is less than a quarter of the 4.50m. depth of Tabun E. Unless there was much loss of sediments through erosion or slumping, it is to the marine chronology that we must turn for a possible explanation.

It has to be recalled that Bezez was not available for occupation until after Enfean I and it seems likely also that the amenities were not so great at the cave during the Yabrudian phase as they later became in the Levalloiso-Mousterian era (see discussion below). Tabun seems to have had the advantage of a situation higher up its cliff face (39m. a.m.s.l.), not subject to inundation or constriction of its immediate neighbourhood by the

oscillating Enfean sea, as was Adlun during the Level C phase. Even today, Tabun Cave is 2½km. from the sea as against the mere 800m. at Adlun that separates Bezez from the seashore. In other words, the Bezez base camp may sometimes have needed to be abandoned, while the inhabitants were forced to forage further afield for sustenance.

TRANSITION TO LEVEL B

Although the Yabrudian Phase at Bezez has a secure geochronological base in the contact of the industry with a marine episode, the starting point in time in the case of the overlying Levalloiso-Mousterian is much harder to establish. In one trench (M) the industry appears directly to overlie the Yabrudian but in another, the main part of the cave (G and D), a distinct sterile layer intervened between the two. In spite of this, our analyses have shown that the industry in all the Levalloiso-Mousterian units is virtually identical. Was the cave abandoned for a time at the end of the Yabrudian Phase, before the arrival of the Mousterians? It has been suggested (Kirkbride, this volume, pp.38-9) that the Acheuleo-Yabrudians had to move out of the cave as the Last Glacial commenced and the karstic processes described by Sweeting rendered it dangerous. Could these refugees perhaps be the makers of the terra fusca industry (Yabrudian with bifaces) in Level 2 of the Zumoffen sequence? A period of abandonment at Bezez and a continuation of occupation at nearby Zumoffen might explain certain stratigraphic features, such as the sterile layer in Bezez Unit G and some of the breccias. Nor should we forget the indications of climatic change during the sequence at Zumoffen - the difference between conditions when the thermophile Strombus bubonius could thrive at the time of the Enfean beaches, and others when mountain tree-pollens were current in Layers 2c-5, with the Yabrudian of the grey breccia.

We cannot answer these questions from our present evidence; we know only that the typological and technological changeover took place and that the distinctive Yabrudian artifacts were replaced by another kind of assemblage. The industry which followed Layer C at Bezez is strikingly similar to the one which succeeded the Yabrudian of Tabun E. However, at Tabun there was a 'Transitional' industrial phase, in which a good number of bifaces were used along with the elongated Levallois points that are so characteristic of the initial Levalloiso-Mousterian (Jelinek, 1981, p.275). Can we see evidence for a transitional phase at Bezez in the presence of a 'Yabrudian element'? This was present even in layers overlying a sterile deposit, obviating the risk of mixture. We do not have to assign the change of industry wholly to the period when the sterile layers formed. In any case, at Bezez the regional pattern suggested in Chapter 4 of this volume (and by Copeland, 1975) holds good: when Levalloiso-Mousterian overlies Yabrudian, it is of the elongated triangular point facies.

Accordingly, we interpret the Bezez stratigraphy as indicating that there was some kind of a break in occupation between the Yabrudian of Level C and the Levalloiso-Mousterian of Level B, but that the amount of time involved is likely to have been short.

THE LEVANTINE MOUSTERIAN PHASE: BEZEZ LEVEL B

We have no dates for the Bezez B/Tabun D type of Levalloiso-Mousterian as such, but dates for assemblages with similar features have been obtained from inland and southern sites which suggest that their probable time-range is from about 90,000 to 50,000 years ago; this was discussed in Chapter 4, Section III, above, pp.301-9, and the reader's attention is called to the recently published debates on the question of the date of the early phase of the Levantine Mousterian in Cauvin and Sanlaville, 1981: for example the contribution of Bar Yosef and Vandermeersch, pp.282-3, wherein recent amino-acid datings and recalculations of older dates from e.g. Tabun are discussed; and that of Marks, pp.288-9 and Table 1, wherein it is suggested that the Negev Early Mousterian begins around 80,000 years ago. However this may be, our Bezez Mousterian is certainly different in style from the various industries, which on stratigraphic or other grounds are demonstrably late Levalloiso-Mousterian, such as Tabun B, Geula A and B, or Ksar Akil 35-26; for many of these there are C14 dates of around 44,000 - 40,000 years B.P. One of the differences is the greater thickness of the flakes in relation to their width in the early Mousterian as has been demonstrated at Tabun by Jelinek on flakes from units equivalent to Levels D and B (1981, p.276).

In Chapter 4, Section III, we also mentioned the site of Naamé, which, although seemingly either contemporary with or slightly older than Bezez B, represented a different facies of the Levalloiso-Mousterian - the broad oval flake facies or 'Phase 2' of Tabun C (Copeland, 1975). It would not be difficult to envisage a time at the end of the Last Interglacial when two different groups of Levalloiso-Mousterians, each with their own knapping traditions, occupied different stretches of the littoral - the 'broad oval' sites clustering in the northern coastal areas while the 'elongated' sites occupied the southern areas - perhaps with connections southeastwards to the Negev (e.g. Rosh Ein Mor) and eastwards into the desert oases. However, we cannot at the moment reconcile this idea with the fact that the broad oval phase occurs later rather than earlier in the Tabun sequence, i.e. in Tabun C rather than Tabun D, which we equate with Bezez B. One way to solve this problem is to suggest that the Tabun D people were eventually replaced by the makers of the Tabun C industry who had spread down from the north; judging by the typology of an assemblage found in situ in the palaeosols of the coastal plain of Atlit, of Enfeo-Naamean age (Farrand and Ronen, 1974), they may have been present already. In any case, at Bezez, any evidence for the Tabun C phase, if it were ever present, would presumably have been lost in the period of erosion which truncated Level B. Because of this erosional loss, we do not know whether the typology changed at Bezez, as it did at Tabun; nor do we know how long the Mousterian occupation at Adlun lasted. In the meantime, we can at least place its start at the end of the Enfean or very soon thereafter - say just before 80,000 years ago, or contemporary with Tabun D, which has been assigned a similar date by Jelinek (1981, p.274), but placed at 100,000 in the scheme favoured by Bar Yosef and Vandermeersch (1981, p.284).

The main features of the Level B industry were enumerated in Chapter 4, Section III; in brief, it is characterised by the use of unidirectionally-prepared cores to produce elongated flake forms, both Levallois and non-Levallois, with triangular points and blades predominating, and with relatively few retouched tools.

The great density of flint tools in the central and innermost parts of the cave, discussed in Section III of Chapter 4, suggested that the manner in which the Levalloiso-Mousterian people were using the site was somewhat different from that of the Acheuleo-Yabrudians, whose tools clustered at the mouth. It is tempting to read into this situation an ecological change, such as the cooler, moister conditions which the pollen spectrum at Abri Zumoffen indicated; this change could have brought about a need for more complete shelter. However, it must be admitted that the lack of Mousterian artifacts at the cave mouth may simply have resulted from slumping or other disturbances as the swallow-holes formed.

It is also noteworthy that many smaller caves and shelters in the same cliff-line as Bezez appear to have been occupied (see map, Fig.P.1, in Chapter 6), either in the Bezez B phase or in a subsequent one corresponding to the lost Mousterian levels higher up in the cave. In any case, the Adlun Promontory seems to have supported quite a substantial population during the Levantine Mousterian period, for which, once again, Bezez Cave could have served as the base camp. The site, therefore, must have had an adequate and lasting resource base; this would surely have included the expanded coastal plain, which would have emerged as the sea-level dropped, leading eventually to an increase in food resources. As we know from the variety of faunal types found, which included varieties of carnivores, game was seemingly obtained from at least two zones, mountain and littoral. The position of Bezez at the junction of these must be counted as one of its important assets. We have however no clear indication of why the Bezez B Mousterians turned to the hunting of smaller animals (cf. Garrard, this volume), while the main item on their menu, Dama, remained the same as that of their Yabrudian and Amudian predecessors.

If we are correct in correlating Bezez B with Tabun D in an early phase of the Levalloiso-Mousterian, we can note that at Tabun the new tradition appeared with what at first seemd to be a dramatically sudden change in the typological sequence (Garrod and Bate, 1937; Jelinek et al., 1973), although the nature of the sedimentation did not markedly change between E and D. This observation is now somewhat modified by the report of Jelinek (1981) that a transitional phase exists, though in general the change can still count as rapid. At Yabrud Shelter I, there is also a somewhat abrupt typological and technological change between Levels 11 and 10, mainly taking the form of a switch from non-Levallois to Levallois methods of flake production (Rust, 1950) and, as we have seen, the pattern is similar at Bezez between Levels C and B. This apparently widespread phenomenon might therefore be taken to represent the replacement of one human population by another which used Levallois techniques; there are however other possible explanations, two of which we may suggest:

1) The Acheuleo-Yabrudians themselves rapidly adopted Levallois methods, albeit in a context in keeping with some of their own traditions (unidirectional forms, blades etc.);

2) A different population, descended from some Final Acheulean group which already used Levallois techniques of débitage, arrived and replaced the existing inhabitants.

At Tabun, perhaps the first is the more likely explanation, given the Transitional material. For Bezez, the first hypothesis is also quite attractive, as it would take into account the presence not far away up the coast of the people of Naamé and Ras el-Kelb, who greatly favoured Levallois technology, from whom the advantages of increased use of the Levallois method might have been learned. The second hypothesis, however, takes into the account the accumulating evidence for considerable technological variability in Late/Final Acheulean industries (reviewed in Copeland and Hours, 1981), which seems to offer satisfactory origins for the different Levalloiso-Mousterian facies which we see appearing in the Levant just before and during the Last Glacial. This possibility was first suggested by Neuville (1952, p.184). To invoke intrusions from outside the Levant seems unnecessary, since the components of the different facies seem to have been in existence already, in the local Acheulean and Yabrudian variants - at Hummal Ia, for example (Copeland, 1981c).

It is difficult in any case to speak of 'different populations', except in a very general sense, since human palaeontological evidence is so sparse. For the Yabrudian period, we only have the Zuttiyeh skull, which may be associated with Yabrudian material, and is assessed as a 'primitive Neanderthal' (Gissis and Bar Yosef, 1974, quoting other references). For the succeeding Mousterian period, we have at Tabun the Layer C/D Neanderthal population. There are no human remains at present unequivocally related to the Bezez B/Tabun D Levalloiso-Mousterian phase, but if the Tabun hominids are a reliable guide we ourselves would expect to find 'primitive' Neanderthalers rather than the sapiens-like individuals of es-Skuhl or Qafsa (Vandermeersch, 1972).

THE LEVANTINE AURIGNACIAN PHASE: BEZEZ LEVEL A

Bearing in mind the controversy concerning the placement of Ewing's Level 8 at Ksar Akil (dated to 26,000 B.C., with an industry which could be intermediate between the Middle and Late Aurignacian), it is probably only safe to date the Bezez A material to later than 26,000 B.C. and much earlier than 16,000 years B.C., by which time the Kebaran complex was well established all over the Levant (references in Copeland, 1975).

Evidence of anything resembling the early Upper Palaeolithic facies of the Levant seems to be lacking in Bezez. The results of our analysis led us to suggest in Chapter 4 Section IV that the Level A material belongs to a Late Levantine Aurignacian context, and that the occupation probably occurred in the early part of Levantine Aurignacian Phase C. Its typological relations seem to us

to lie with Ksar Akil Levels 8 and 7, el-Wad C and D1, and Kebara D1.

This era is associated, in the opinion of many workers, with the cold peak of the Last Glacial (Würm III in the old Alpine terms used in much of the literature), and in this event the sea-level along the Levant coast would be at its lowest (15km. west of the present shore at minus 120m., according to Milliman and Emery, 1968). Bezez Cave would therefore at this time have overlooked a considerable coastal plain, dissected by the ravines of the east-west flowing rivers (Goedike, 1972); this would have compensated for some loss of hunting territory in the mountains, which, when the cold became most severe, suffered a depression of the tree-line (Butzer, 1964). However, the bulk of the forest cover was maintained throughout the Pleniglacial (30,000 - 16,000 years B.P.) in the central and northern Levant, according to Bottema and Van Zeist (1981, pp.129-30). Unfortunately, as Garrard has indicated in Chapter 7, little faunal evidence is available for the Bezez A phase. Judging by the faunal data from contemporary sites, we might expect Dama to have been the dominant game animal, as was the case both at Mount Carmel and at Ksar Akil. However, a gradual shift begins at the end of the Aurignacian at these two latter sites towards increased reliance on gazelle in the case of Mount Carmel, and on caprines at the more northerly site of Ksar Akil. Since Adlun is almost half way between Mount Carmel and the Antelias Valley (it lies in fact 73km. south of Ksar Akil, and 79km. north of el-Wad), it is not immediately clear which pattern would be more likely to be followed at Bezez Cave. Since the Bezez Aurignacian seems to form a typological link between these two regions of the Levant coast, it may also relate culturally to both at this late stage of the Levantine Aurignacian. Many interesting questions would certainly arise if Level A had offered us richer archaeological evidence.

THE HEAVY NEOLITHIC

On such evidence as we have, the Neolithic material from Bezez could very well date to the 6th millennium or a little earlier, if the typology can be relied on.

To summarise the conclusions reached in Chapter 5, it is clear that the occurrence at Bezez of two components in our Neolithic, one gigantic and one normal-sized, as well as the extremely used and battered appearance of the pieces, does not allow us to put forward the same interpretation for our material as that proposed by J. Cauvin for the Beqa'a Heavy Neolithic, namely that the industry consists largely of factory rough-outs. Nevertheless, close typological comparisons can be made between some of the Bezez artifacts and the specimens from the big open stations in the south Beqa'a, situated eastward across the mountains from Adlun. We have suggested that at Bezez, the heavy element in the Neolithic industry represents a robust wood-working kit, perhaps for use in forest clearance and the manufacture of such things as split stakes and wooden wedges, while the lighter component, including shaped axes and burins, would perhaps represent the tools needed for somewhat finer work, under the general heading of carpentry.

Finally, it was suggested that a stage earlier than Byblos Moyen might be represented at Bezez, possibly a pre-pottery one.

It remains only to stress that the chronological scheme which we have tentatively put forward in this report, and indeed all our conclusions and interpretations of the evidence, must be subjected to constant revision as more data come to light or more analyses of existing data are presented, from sites anywhere in the Levant. In particular we anticipate that our own conclusions may need reevaluation in the light of the final and definitive results from the great campaign at Tabun, a site with which Dorothy Garrod's own name will always be closely associated, however many archaeologists may work there in the future. Unfortunately, not much more can be expected to emerge from further work at Adlun for the foreseeable future; it is used as a strongpoint by a group of guerillas and has been intermittently in the firing line during Lebanon's Civil War and continuing period of unrest. New data from Yabrud and Ksar Akil, and definitive reporting of the recently discovered Syrian sites to which we have made reference, should all prove profoundly important. Quaternary research throughout the Levant will surely bring new information relating to the local marine stages, and the local faunal and floral successions of the Upper Pleistocene, while research almost anywhere in the Old World, of which the Levant is only a small corner, may at any time change drastically our thinking about Pleistocene chronology and the overall sequence of climatic stages. We hope and believe that Dorothy Garrod's work at Adlun will always remain a useful contribution.

EDITOR'S POSTSCRIPT

ADLUN AS A PALAEOLITHIC SITE

by Derek Roe

I was asked to write a postscript to this volume after I had completed the editing of it; it is a privilege to do so and I undertook both tasks willingly, being deeply convinced of the importance for Palaeolithic studies both of the material described and also of the geographical area in which Adlun lies: that is, the narrower area of the Levant coast and the broader context of the Middle East. Quite apart from that, who would refuse even a small contribution to the final presentation of a piece of major research begun by Professor Dorothy Garrod, in a volume dedicated to Gertrude Caton-Thompson? Both will always be remembered as great figures of the present century in Palaeolithic archaeology and the influence of their work on the Palaeolithic of the Middle East will be permanent.

It is no part of my task to summarise the finds made at Adlun, or to draw internal conclusions from the analyses carried out: all that was done in the text and especially in Chapter 8. It seems to me that there are just two things remaining at the close: to say briefly how the text reached its final form, and to reflect on how the work done at Adlun may fit into the context of current Palaeolithic research.

THE PREPARATION OF THE ADLUN REPORT

When an editor's name appears on a volume such as this, there is often no way of assessing the extent of his or her contribution. There are working and non-working editors. At one end of the scale are editors who have been deeply involved from the outset with the research described and have contributed major portions of the text; at the other, there are editors who have been persuaded to lend their name to a volume, but may never have read a word of it. Somewhere in between, there are editors whose function is simply to edit, in the sense of bringing as much as they can in the way of order and consistency of presentation to a mass of typescript produced by several different authors and preparing the final copy for printing and publication. It certainly helps if they have some technical familiarity with the general field in which the research lies, but they need not be members of the team. My own role has been of this latter kind. I have always thought it extremely unfair when a volume that represents the dedicated original research of a group of distinguished scholars becomes listed in bibliographies and generally referred to under the name of an editor who had little or nothing to do with the work reported. The injustice may become downright dishonesty if an editor includes such volumes in a list of his own published works, without stating clearly that his role was purely editorial. Such situations are unfortunately not unknown. I would therefore like to make it completely clear that the foregoing text is the original work of the authors whose names appear with each chapter or section, and that even as Lorraine Copeland is the author of the largest portion of the text, so do I

also regard her as the moving spirit that has brought the report to publication at last, after so many delays.

Myself, I have never had the good fortune to visit the Adlun sites or Lebanon, though I shall hope to do so one day. I was actually born in the year in which Dorothy Garrod and her colleagues published the first volume of The Stone Age of Mount Carmel, though I have to admit to not having read it immediately and I regret that no thoughtful godparent secured me a copy at the original price. I was only beginning my undergraduate career at Cambridge and studying prehistory for the first time in 1958, the year when the campaign of excavations at the Lebanese sites began. I met Professor Garrod only once, briefly introduced to her by Charles McBurney when she came to Cambridge to give a lecture in 1960. I have visited Tabun and the other principal Mount Carmel caves, but not until 1980, on the occasion of the conference at Haifa referred to by Mlle Suzanne de Saint-Mathurin in her Preface - by which time I was well embarked on the editing of this volume. So it will be very clear that my acquaintance with the subject matter of this report depends almost entirely on the literature, aided by access to the collections of artifacts from the Mount Carmel sites given by Dorothy Garrod to the Universities of Oxford and Cambridge. As an undergraduate, I learned from the literature about Yabrudian, Pre-Aurignacian, Amudian, Levalloiso-Mousterian, Levantine Aurignacian and the rest, and wrote essays about them for Charles McBurney; from 1965 onwards, my own students have done the same for me, still always from the available literature - and now, of course, I have learnt in this report of many relevant references which I have never read. So it should be obvious that my work on the foregoing chapters as editor is in no sense an original contribution to the Palaeolithic prehistory of the Levant.

From the editing point of view, it is perhaps less of a disadvantage than might appear to come to the task as an outsider. It should be recalled that the typescript came to me only long after it had been completed, following the sad early death of John Waechter, who had agreed to be editor after Dorothy Garrod died, having plenty of first hand experience of the research area. I was therefore never involved in the original shaping of the volume: what chapters there should be, what ground each should cover, or what should be the approaches and analytical methodology; nor was I qualified to tell the authors at this late stage what they should or should not have written. So I took the contents, order and methodology as established and sought only to make the text as presented completely intelligible to myself as an outsider with a working knowledge of the Old World Palaeolithic, hoping it would thereby be clear to others in the same position. This meant that I cut very little out, but rather called for extra sentences or paragraphs here and there. Other updating additions were made by the authors themselves, because existing commitments made my progress on the Adlun volume deplorably slow: conferences took place, publications appeared and new discoveries were made, reference to which simply could not be omitted, even if it were too late for major changes to the text. The line has effectively been drawn at the end of November 1981. The authors have waited too long already. After all, this is not the last word ever to be written

about the Adlun sites and their significance: it is the long overdue definitive report on fieldwork done some 20 years ago and the subsequent analysis of the finds, with conclusions assessing the current status of the sites. In the end, it appears at no bad time: much has been quietly achieved in the Levant over the past decade, and there is a mood of stocktaking and reinterpretation. But the raw material of reinterpretation always includes definitive information about old sites as well as the first reports on new ones, and no-one can doubt the significance of the sequence of industries uncovered at Adlun.

THE RESEARCH AND THE FINDS AT ADLUN: SOME GENERAL THOUGHTS ON THEIR SIGNIFICANCE

Another advantage which belongs to an independent editor is that he can give his own evaluation of the work reported, free from the restraining hand of modesty, and in the same way he can point to any strategic omissions without automatically taking the blame for them: it is like writing an objective book review. For of course there are omissions: so many technical aids to the excavation and reporting of archaeological material are now available that we tend to forget that in the period 1958-1964 hardly any of them existed or seemed possible. If the field campaign were beginning now, what samples might not be taken for chronometric dating by one or other of the Uranium decay based methods, or for full-scale study of all the cave sediments and their contents, including microfauna, pollen and charcoal? What might not be attempted with microwear analysis of the stone artifacts, to provide factual evidence on the uses of various crucial tool-types, or with the conjoining of artifacts to establish beyond doubt the contemporaneity of different areas of occupation, either within Bezez Cave itself or maybe between Bezez and Abri Zumoffen during the Yabrudian phase, as tentatively suggested in the text? To some extent, scope may still exist in the collections for microwear work at least, but not with the degree of precision that would be available if the original excavation had been conducted with such work in view. One can hardly blame the original excavators for that. Suppose we really were starting the whole project now, and did all the things mentioned and more: should we not still be blamed in twenty years' time for failing to provide for future analytical processes that we cannot at present even imagine? In the late 1950s and early 1960s, excavated stone artifacts could simply be studied typologically and technologically, and in that process even proper statistical analysis was still rare. It is surely better to think less of what was omitted and more of what has actually been achieved, for example by Lorraine Copeland's painstaking analysis of archaeological samples that were far from ideal for the purpose, and could not be used for instance for the modern computer-based analyses that are so productive, given more reliable sets of data.

Major changes and developments have taken place since the 1961 report by Garrod and Kirkbride, in almost all branches of Quaternary Research. On the geological side, most of them are bound up with the expansion of the succession of Pleistocene climatic stages from the simple four-glacials Alpine sequence to the present

complex temperature curves reconstructed from the deep sea sediment cores or from long pollen cores raised from terrestrial deposits, curves whose proliferation of peaks and valleys makes the Alps themselves look quite an ordinary stretch of country. Whether one is concerned with terrestrial sedimentation in a cave, or with marine transgressions and regressions - and at Adlun we are concerned with both - the whole framework for Pleistocene correlations and dating has changed dramatically over the past twenty years, and will not be the subject of new general agreement for some while yet.

One can read the names of Günz, Mindel, Riss and Würm in reports of far too recent date on Middle Eastern subjects. One can even read them in this volume, though I have done my best to put local Pleistocene stage names in brackets with them, or to add inverted commas or some qualifying phrase, wherever possible; sometimes it is a case of direct reference to previous reporting, and such devices would not have been appropriate. In fact, it seems to me that this volume has been prepared during a transitional period of gradual adoption of new terminologies, notably Sanlaville's Levantine marine stage names, and at a time when those principally concerned are not yet agreed on permanent nomenclature and accordingly not yet ready or able to shake off all the old names. But at least the problems of the expanding sequence are now clear enough to most workers and are being actively researched. The working hypotheses adopted in this volume, or even the necessity to present alternative interpretations without really being able to choose between them, should stimulate the work that is going on. New sites with good sequences, and new high-quality chronometric dates, are all going to be needed; Adlun cannot provide these. In view of all this, we have to recall that the original field observations were made and the field notes recorded within the conceptual framework of a far more restricted Quaternary sequence and timescale than the one towards which we are now moving. The correlations as they are presented here would hardly have been possible even at the very end of Dorothy Garrod's own lifetime. It will be interesting to see how they appear in, say, five years' time.

So we may turn to the actual archaeological sequence that the Adlun sites have afforded. Its nature and implications give it distinction on an international scale: Yabrudian, with its own variants, notably the Beach Industry and Amudian at Zumoffen; Levalloiso-Mousterian; Levantine Aurignacian; and the Neolithic material. It remains valid now, as it was for Dorothy Garrod herself, to make comparisons with Yabrud and with Tabun; to some extent, the general problems of interpretation are the same, whichever of these sites one is considering. Other sites should certainly be involved, of course: Zuttiyeh Cave, in the Wady el Amud in Israel, for example, and the recently discovered Hummal Ia in the El Koum basin, Syria, about which more information will be eagerly awaited. Nor should the Haua Fteah Cave in Cyrenaican Libya (McBurney, 1967) be forgotten, since the great sequence there carries some of the same questions round the south east corner of the Mediterranean, as it were, though it also raises some of its

own. At the Haua Fteah too, blade tool types occur at the base of the sequence, below a massive Levalloiso-Mousterian stage; but although the following Early Upper Palaeolithic (called Dabban) has an important element of chanfreins and may not be wholly unconnected with the first Upper Palaeolithic of the Levant, there is no sign at the Haua of any stage of the typical Aurignacian that occurs abundantly at the well-known Levantine sites discussed in this volume in the last section of Chapter 4, including Bezez Level A. The Cyrenaican sequence makes one wonder what is the real extent of the 'local' geographical context in which the problems raised at Bezez should be discussed.

It is probably the Yabrudian series at Adlun that raises the most fascinating problems. The feeling of Dorothy Garrod herself was that the Amudian was a separate entity, a "precocious blade industry", whose appearance at this early date was not irrelevant to the origin of the "true" Upper Palaeolithic of the Middle East and its sudden arrival, as she saw it, in the Levant several tens of thousands of years after the Amudian itself. In Chapter 8 of this volume, the possibility that the Amudian was indeed made at Adlun during Yabrudian times by a contemporary but separate population is allowed to survive the discussion, but the authors lean strongly towards the alternative view that the Amudian is an integral part of the Yabrudian complex, within which it constitutes a specialised tool-kit, i.e. an example of functional variation. They further regard the Beach Industry and the Amudian at Abri Zumoffen as variants of a single industry, for which Amudian is the appropriate name.

Here again is a change of direction in interpretation, coming about perhaps contrary to expectation during the long period which the preparation of this report has taken, but looking reasonable enough now. It is in sympathy with the current disposition to see local sequences often as essentially continuous, even when there seem to be quite sharp breaks in typology or technology and it also reflects the healthy general awareness at last that stone tool-kits were made to fulfill contemporary economic tasks, not to amuse prehistorians. It will be recalled that this startling view first began to make headway during the middle 1960s. Of course, one must always beware of failing to spot an important distinct group by assuming that all variation is functional, but the theoretical difficulties are a great barrier to certainty. Perhaps the authors are right to leave the option still open. In much later prehistory, exotic objects may be discernible as such from their actual fabric or technology or from details of highly characteristic decoration. But Palaeolithic bands would be making most of their stone tools from the same locally available raw materials, however many distinct groups were sharing an area. If a cave or shelter were to change ownership every few days or every few weeks over a given period, and the artifacts of one group (blade-making Amudians, let us say) were dropped on the floor amongst those of the previous occupants (Yabrudians, who made racloirs and occasional bifaces), can we really believe that even the most precise of modern excavators could recognise and demonstrate the presence of more than one industry? On that theory, the sporadic occurrence of

blades in higher levels would merely indicate continued but less frequent visits by the blade-making group.

Such lines of thought, though valid, are perhaps not very helpful, except to the extent that they remind us that most 'conclusions' in Palaeolithic archaeology are liable to consist of the most likely option, chosen from several possibilities, none of which can actually be disproved. Here, on balance, the Amudian of Adlun is taken to be not a "precocious blade industry" of independent character, but an early use for specific reasons of techniques which were only to become dominant very much later. This device was adopted by people whose usual knapping styles were more traditional, so to speak, but they were capable of striking blades when they needed long, flat, narrow blanks for the manufacture of tools for whatever was the special activity involved. It is interesting to note that Arthur Jelinek (1981) regards the Tabun Amudian in a similar light, namely as an integral part of a single local tradition, for which he has suggested the name Mugharan.

The presence of the blade tools in the lower levels of Zumoffen has perhaps tended to divert attention from other aspects of the Yabrudian. The latter is increasingly becoming regarded for formal purposes as the earliest phase of the Levantine Middle Palaeolithic rather than the end of the Lower Palaeolithic, even though handaxes of late Acheulean style are often present (even to the extent that the name Acheuleo-Yabrudian suggests); the most striking component in Bezez Level C is the finely made scraper element, often with retouch very much in the 'Quina' manner (for breakdown of the racloir types, see Chapter 4, Section I). Yet the classical Middle Palaeolithic of the region comes only later with the Levalloiso-Mousterian, as in Bezez Level B, very different in its basic technology. Not long ago this occurrence of an early Middle Palaeolithic stage emerging from an essentially Acheulian background and clearly preceding the classic Mousterian would have seemed remarkable, but if one looks around Europe it is surely becoming much less so. There are various examples of 'pre-Mousterian' or 'proto-Mousterian' industries in southern France and some adjacent areas of Western Europe, which often seem to date from the Riss/Saale/Wolstonian glacial complex (Ronen, ed., in preparation; Cahen, ed., in preparation). Alongside them are several instances of Acheulian industries with exceptional flake tool components, in which Quina-like pieces feature: for example, the Hoxne Upper Industry in England (Singer and Wymer, 1976), l'Atelier Commont in northern France (Bordes and Fitte, 1953), or occurrences at Orgnac III (Combier, 1967) and perhaps Grotte du Lazeret (de Lumley, 1969) in south-eastern France. Should we now compare these occurrences directly with the Yabrudian, and conclude that in several different parts of the Old World, early in the Upper Pleistocene, the Acheulian included certain progressive industries that took one of a number of important steps which led to the introduction of classical Middle Palaeolithic tool-making traditions? Although prepared core flaking techniques were certainly known at this time, it appears that the massive adoption of them that characterises the full development of the Middle Palaeolithic took place as a separate step - a step which at Bezez Cave takes us from Level C to Level B. As for the remarkable

occurrence of the Amudian technology within the Yabrudian, involving the systematic production of blade blanks, that does not seem to be represented on any substantial scale in the European industries to which reference has just been made. In that case, the Amudian and Pre-Aurignacian must be counted as special to the Middle East.

The Levalloiso-Mousterian of Bezez Level B raises its own points of interest and these have been discussed in the text. One may suspect that the loss by erosion of a considerable depth of deposit at the top of Level B, shown by the traces of breccia higher on the walls, has robbed us of half the story. Would the sequence seen at Tabun have been repeated here at Bezez, with a broad oval flake facies of Levalloiso-Mousterian following the flake-blade and Levallois point version? What is the significance of these variants in the Levant: is it purely a chronological succession, or is functional difference the controlling factor? One might well suppose that a Levallois point and a broad oval Levallois flake had somewhat different functions and other parts of these industries show some common ground; microwear analysis could perhaps clarify the actual situation. It is interesting to recall that in the British Lower and Middle Palaeolithic sequence, two rather similar sets of Levalloisian industries occur and, where the chronology is clear, it is the oval flake version which comes first and the flake-blade one second (cf. Roe, 1981). However, when the discussion starts to involve direct comparison with Britain, some two and a half thousand miles away and in a different climatic zone, one is perhaps casting the net too wide. In any case, only one Levalloiso-Mousterian industry actually exists at Bezez as the strata have come down to us.

Similarly, the Aurignacian of Bezez Level A might disappoint us - not in itself, for it is a fine and characteristic industry and a useful dot on the distribution map - but because there is only a single stage represented. Lorraine Copeland argues cogently on typological and technological grounds that this is relatively late, equivalent to the Levantine Aurignacian C. The Upper Palaeolithic of the Levant has expanded considerably since the days of the Emiran - Aurignacian - Kebaran sequence of Dorothy Garrod and others. Ksar Akil is a site of the first importance in this respect, especially for the earlier part of the sequence, and fuller reports on the recent work there will be eagerly awaited. The same may be said of Boker Tachtit in the Negev. The initial Upper Palaeolithic stage in the Levant is arguably the most fascinating of all and the question of its relationship to adjacent areas is far from settled. How much does it have in common with the first Dabban of Cyrenaica, when the two are compared in detail, and how closely does the dating correlate for the beginning of each? And what, in the broader context of the Middle East, is the role of the earlier Baradostian away to the east, which sometimes seems to get forgotten in general discussions? Level A at Bezez does not contribute to these particular debates: was the Adlun area never visited by the population concerned? Why not? Or has an occupation level of Early Upper Palaeolithic age been lost at the disconformity between B and A, along with the upper part of the

Levalloiso-Mousterian? But the discussion ought really to be confined to what is actually present, and a big enough unsolved problem attaches to the typical Aurignacian of the Levant: what is its relationship with the Aurignacian of Europe, with Eastern and Central Europe on the one hand and Western Europe on the other?

Aurignacian technology and typology seem so unusual and distinctive within the Old World Upper Palaeolithic, that it is hard to imagine that closely similar 'typical Aurignacian' industries would be generated quite independently in areas as far apart as the Levant and southwestern France as technological responses to broadly comparable ecological situations or economic needs. The overall distribution of Aurignacian industries still looks more like a record of the geographical range of some single population, not necessarily occupying all the territory concerned at the same time; this is very much what Dorothy Garrod believed. But did they necessarily begin their wanderings in the east and the south, in the Levant, and move north and then west from there, as was long thought? The available chronometric dates are insufficient for us to be sure; it is quite possible at present to argue an origin in the middle of the distribution, in Central or Eastern Europe, followed by movements that eventually reached both extremes. A single movement from the western extreme to the eastern one certainly seems highly unlikely. What exactly was the route between Eastern Europe and the Levant (regardless of the direction of movement)? Surely there must be more sites awaiting discovery. Why was there no major penetration of the U.S.S.R. by the bearers of typical Aurignacian industries? If the source of the Aurignacian dispersal was in fact the Levant, from what base did the typical Aurignacian industries emerge, relatively rapidly, as it seems? Was it some part of the 'transitional' industries of the earliest local Upper Palaeolithic, and if so to what mechanisms should we attribute the technological and typological changes, which some authorities would regard as substantial? Why was there apparently no penetration at all of the North African Mediterranean coastal strip, no incursion into the Dabban territory of Cyrenaican Libya, nor into any part of the Nile Valley? (The southernmost Aurignacian site so far known is in the Central Negev (Marks, 1977, p.20).) It is easy enough for an outside observer to ask such sweeping questions, but they arise fairly enough when we contemplate the industry of Level A in Bezez Cave, and there do not seem to be generally agreed answers yet to many of them. If the starting points are perhaps typology and geography, the eventual answers are likely to involve many other factors and the research that produces them will be of exceptional interest.

It is precisely because points arise like those suggested in the last few pages that Bezez Cave and the other Adlun sites stand far above the ordinary run of Palaeolithic occurrences. That is why the production of this volume seemed to me so well worthwhile and it was for very similar reasons that Dorothy Garrod began her research at the Lebanese sites. Bezez Cave, after all, lies in a geographical region of great interest; if the immediately adjacent route of human movement clearly trends north to south or south to north, following the line of the Levant coast, we should not forget

that the Middle East as a whole is also an area of junction between East and West.

'Middle East' is a somewhat curious, if not even presumptuous, term and one might feel a little surprised that it has survived in general use. Where does the 'Near' East end and the 'Middle' East begin? Does not the area so described in fact lie to the _west_ of many highly important regions? Indeed, one could do worse than regard it as the centre of the world and certainly, if some international congress had now to decide where to place the 0° meridian for purposes of measuring longitude, some part of what we call the Middle East might well have the edge on Greenwich. 'The Middle East' is on everyone's lips these days, for reasons which have nothing to do with the Palaeolithic. Yet it is perhaps worth ending with a gentle enquiry: has the community of Palaeolithic archaeologists over the last few years almost achieved the unlikely feat of forgetting the Middle East? There has been so much elsewhere to catch the attention - in East Africa, in southern France or in Central Europe, for example. Early hominid fossils and big chronometric dates have an eternal appeal and the Middle East has yielded few of either. Ubeidiya in the Jordan valley is relatively young by African standards, however remarkable in its own area, and no early hominid remains were found there. Is that any good reason to overlook a stratified site some three quarters of a million years old, with over 60 archaeological horizons and a mass of palaeoenvironmental data? And for the later Lower Palaeolithic and the succeeding periods represented at Adlun, the Mount Carmel caves, the Syrian sites and elsewhere, the region is rich by any standards.

Perhaps two factors have combined to lessen general interest of late. First, it cannot be concealed that there is at present no great freedom of movement over the area as a whole, so that those who for the sake of scholarship would wish to go unhindered from country to country, studying and comparing sites and material, cannot proceed as they would wish. Modern politics (colleagues with a different taste in language might prefer to say 'the ongoing broad-spectrum socio-cultural confrontation situation') have perhaps caused a greater restriction of human movement here than Pleistocene climatic fluctuations ever achieved, and of this _H. sapiens sapiens_ has no cause to be proud. Second, and easier to mend, various major publications on important Palaeolithic sites and long research campaigns have been in course of preparation; their appearance, perhaps not much longer delayed, should bring a revival of interest. This report on Adlun was of that number, but strike it now from the list: Dorothy Garrod's work at Bezez and the subsequent analysis of her discoveries are now available to all.

Oxford, 20 December 1981 Derek Roe

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